The Women's Health and Aging Study

National Institutes of Health
National Institute on Aging

Health and Social Characteristics of Older Women with Disability

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You think we sit here empty, work done day gone
Waiting for dark
Or that we rattle drums, clash cymbals
To hide the fear that we must go
But inside the husks of age, there's breath
Hearts that sound life's tocsin still
Our minds still dream the dreams of youth
Love burns steady, not as fierce and careless
But calm and sure, deep as the ocean
We still can wonder at God's creation
Search out the truths that undergird
The yeasty world around us
Find new joys, discover new lands
Tread new paths, mine new ores
Our crutches, walkers, chairs, and canes
Are badges of our determination
To hold the fort of independence
Against the forces that would lay us down
Of course you'll live in worlds we'll never see
But we've known things forever closed to you
To walk a city's streets on summer evenings
To leave doors unlocked, our windows open
To let our children wander free, perhaps
Barefoot in the silky dust of unpaved streets
To see the world around a friendly place
Not a constant threat to life and health
Perhaps you'll find when you grow old
Life need not glitter to be gold.

Robert Drury
Catonsville, Maryland

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Foreword

Terrie T. Wetle, Richard J. Havlik

The Women's Health and Aging Study (WHAS) is a major effort by the National Institute on Aging (NIA) to better understand the causes and course of disability in older women. Disability in later life is a serious health problem for women, threatening their independence and resulting in significant health care needs and expenditures. Although women live longer than men, they suffer disproportionately from disability and its consequences.

NIA's Epidemiology, Demography and Biometry Program initiated the WHAS through a contract with the Johns Hopkins University School of Medicine in 1991. The baseline screening assessed a representative sample of older women living in the community in Baltimore, Maryland, to identify those who were moderately to severely disabled, representing approximately the one-third most disabled women age 65 years and older. Baseline intensive study of the 1,002 disabled women who participated in the full evaluation was completed in early 1995. This monograph presents comprehensive data on health and social characteristics of these women. Followup of this cohort is ongoing.

The purpose of this monograph is to provide research and policy communities early access to some of the unique study methods and major baseline findings of this study. The descriptive data presented here offer an excellent overview of diseases and disability and their impact on older women. For investigators, the monograph is a resource for those who would like to use similar questionnaires and examination procedures. It gives policy makers ready access to timely and detailed data they may need for today's discussion of long-term care and other issues affecting frail older people and their families. Finally, data presented here are a testament to the ability of older women with disabilities to function in the real world, as exemplified in Chapter 3 on adaptation to disability and in Chapter 5 on aspects of daily life.

We wish to acknowledge the excellent work of the editors and authors of this book and their timely publication of these data. We are especially pleased that the text and tables in this monograph will be available on the Internet for use by local and global audiences. We would particularly like to express appreciation to Drs. Linda Fried and Jack Guralnik, who chaired the WHAS Steering Committee meetings and facilitated the work of the large group of investigators and field staff who made important contributions to this study. The study has benefited greatly from the diverse group of collaborators from academia, the private sector, and government, including visiting scientists from abroad. Their expertise in geriatrics, epidemiology, physical disability, social psychology, survey methodology, biochemical markers, and clinical pharmacology has enhanced both the design and conduct of the project.

We believe that this report will be of benefit to a wide audience and will stimulate new analytic and research efforts. Ultimately, the WHAS has the potential to play an important role in the development of effective treatments and preventive strategies for physical disability in all older persons.

The Women's Health and Aging Study: An Introduction

Linda P. Fried, Judith D. Kasper, Jack M. Guralnik, Eleanor M. Simonsick

This monograph introduces the Women's Health and Aging Study (WHAS). The WHAS, funded by the National Institute on Aging, is a prospective, observational study of 1,002 women age 65 years and older who were moderately to severely disabled, but not severely cognitively impaired, at study entry. These women represent the approximately one-third most disabled older women living in the community. This monograph presents comprehensive information on their physical disability; health status, including disease and physiologic measures; health care and service utilization; and their daily lives. It also describes the representative population of women age 65 years and older from which the WHAS study population was drawn. These data were obtained from November 1992 to February 1995 during the baseline recruitment and evaluation of WHAS participants.

The goal of the WHAS is to determine the causes and course of physical disability. Using data from the baseline assessment, presented in this monograph, and from followup assessments performed every 6 months over 3 years, the study will:

1. Examine the natural history of physical disability;
2. Identify the major diseases and conditions responsible for physical disability;
3. Evaluate causes of changes in physical function over time, including both decline and improvement;
4. Assess the role of health care utilization, community, and informal services in modifying the course and severity of disability;
5. Identify subsets of disabled women at highest risk of progression of disability; and
6. Determine opportunities for secondary and tertiary prevention of disability.

This introduction provides a framework for the data presented in this monograph, including the significance of disability for older adults and for older women in particular, an overview of the design and methods of the WHAS, and a description of the areas of unique data offered by this study.

Background and Rationale for the WHAS: The Import of Disability in Older Women

The dramatic increases in life expectancy over the 20th century, the resulting increase in the older population, and the rising costs of long-term care have made age-associated disability and dependency matters of national concern. Overall, 40 percent of people age 70 years and older report limitations in their ability to carry on their usual activities (Cohen and Van Nostrand, 1995). According to the 1990 U.S. Census, among persons age 65 years and older, 16 percent have difficulty with basic mobility-related activities such as walking short distances, and 12 percent have difficulty with basic self-care tasks (LaPlante, 1993). Five to 8 percent of noninstitutionalized adults age 65 years and older receive help with one or more activities of daily living (ADLs) (Wiener et al., 1990). In addition to this disability in community-dwelling older adults, 7 percent of people age 65 years and older reside in a nursing home,

including 8 percent of women and 5 percent of men (Feinleib et al., 1994). Ninety percent of these individuals are dependent in one or more ADLs (Hing et al., 1989). Clearly, disability and dependency are highly prevalent in older adults.

Disability in old age is associated with poor quality of life, dependence on formal and informal care providers, and often substantial medical and long-term care costs. In addition, disabled persons are at increased risk of other adverse health outcomes, including further declines in function (Branch et al., 1984; Manton, 1988), acute illnesses and injuries (Branch and Meyers, 1987; Fried and Bush, 1988), falls (Nevitt et al., 1989; Tinetti et al., 1986, 1988), recurrent hospitalization, and mortality (Branch, 1980; Corti et al., 1994; Koyano et al., 1986; Manton, 1988; Warren and Knight, 1982). The more severe the disability, the higher the risk of these outcomes. Successful prevention or delay of disability could make a substantial difference in health status and well-being, as well as in the care needs and care costs of the older population.

The high health care needs and costs of disabled older adults (Fried and Bush, 1988; Soldo and Manton, 1985) may result from the diseases that underlie disability, the severity of disease, and/or the presence of comorbid conditions. Recent research has added much to our understanding of the associations of specific diseases and comorbidity with physical disability. The major diseases reported to be associated with disability include heart disease, osteoarthritis, hip fracture, diabetes, intermittent claudication, stroke, chronic obstructive pulmonary disease, visual impairment, hearing impairment, depression, and cognitive impairment. Effective prevention requires an understanding of the types of disability caused by specific diseases, the mechanisms underlying the etiology of disability, the relationship between disease severity and the development and progression of disability, and the interactions of specific comorbid diseases.

The WHAS seeks to define these aspects of disability in older women for a number of reasons. Women make up the majority of the older population, represent a larger proportion of the total population at each higher age, report higher rates of physical disability, and spend more years in a disabled state. They also make up a substantially larger proportion of the nursing home population and are more vulnerable in terms of need for formal and informal care because of their higher rate of widowhood, especially at the oldest ages. The burden of disability in older women has wide-ranging and profound effects on older women themselves, their families, and the health care system. While it was recognized in designing this study that potentially valuable male-female comparisons are sacrificed by examining women only, and that certain findings on the causes and course of disability in women may not hold true in men, the magnitude of the problem in women and the analytic power gained by studying women only made this a compelling focus.

In 1991, the Institute of Medicine of the National Academy of Sciences published the priorities for a national agenda for aging research (Lonergan and Krevans, 1991). Its first priority in three of five areas included research "on the causes, prevention, management, and rehabilitation of disability," "on the most important social and psychological techniques to maintain and improve . . . level of functioning among older persons," and on "the factors that determine the need for and use of long-term care" (Lonergan and Krevans, 1991, pp.1826-1827). The data from this study will provide important information, with a breadth and level of detail generally not available, that will aid the policy and scientific communities in addressing these issues.

Overview of the WHAS Design

The study population for the WHAS was obtained by drawing a random sample from the Health Care Financing Administration's Medicare enrollment file for the 32,538 women residing in 12 contiguous Zip Code areas in Baltimore, Maryland (see Figures I.1 and I.2). This sampling frame represented all female Medicare beneficiaries as of September 1, 1992. An age-stratified (65-74, 75-84, 85 and older) random sample was se-

lected, yielding 6,521 women for screening to determine study eligibility (see Appendix A for details on sampling). The Health Care Financing Administration sent a letter to each woman describing the study. Two weeks later the study Principal Investigator (Linda P. Fried) sent a second letter inviting their participation. A study interviewer contacted women in their homes to administer the screening questionnaire and determine study eligibility. Women residing in nursing homes at the time of contact and those no longer living in the catchment area were not eligible for screening. (Some women who were listed on the Medicare files were found to be deceased.) Of those sampled, 5,316 women were eligible for screening: 1,179 women could not be located or contacted, or refused screening, and 4,137 women were screened.

The screening interview was designed to identify the approximately one-third most disabled older women living in the community. The approach used was derived from previous research in which factor analyses indicated a clustering of difficulty in certain tasks, such that difficulty in one task was associated with difficulty in the other tasks in the group (Fried et al., 1994). It was found that physical disability can be usefully categorized into four domains consisting of related tasks primarily associated with: (1) mobility and exercise tolerance; (2) upper extremity function; (3) higher functioning tasks (a subset of instrumental activities of daily living, not including heavy housework); and (4) basic self-care tasks (a subset of non-mobility dependent ADLs). Using this domain-oriented approach, evaluation of population-based data (1984 National Health Interview Survey data from the Supplement on Aging) indicated that individuals who reported difficulty in two, three, or four domains represented one-third of persons residing in the community (WHAS Manual of Operations, 1993). This conceptual approach and empirical analysis provided the basis for defining study eligibility, based on self-report of difficulty in tasks in two or more domains of function (see Appendix B for screening instrument).

Details of screening and eligibility criteria are discussed in Chapter 1. In brief, of the 4,137 women age 65 years and older who were screened, 3,841 were able to complete the interview on their own, 1,409 met study eligibility criteria, and 1,002 agreed to participate in the study.

After signing an informed consent, study participants received an extensive interview in their homes. This interview ascertained many aspects of physical function and disability, including tasks affected, severity of difficulty or dependency, and adaptations to disabilities (Fried et al., 1991). Also assessed were history of physician diagnosis, symptoms and severity of over 20 diseases and conditions, current use of prescription and non-prescription medications, psychological functioning, social support and social networks, health-related behaviors, and health care and service utilization. The questionnaire for the baseline interview can be found in Appendix B. The interviewer also administered several performance-based measures of functioning (functional reach, lock and key, buttoning a blouse, using a telephone, visual memory, and block construction), and measured height, weight, and visual acuity (see Appendix C).

Two weeks later, by appointment, a trained nurse using a standardized protocol (see Appendix D) conducted a 4- to 5-hour examination of the study participant in her home. The goal of the examination was to validate the presence of specific diseases and physiologic states and to characterize their severity. The examination included the following: blood pressure and heart rate; anthropometry; electrocardiogram and auscultation of the heart and lungs; 4-hour ambulatory electrocardiogram; ankle:arm blood pressure ratio; assessment of musculoskeletal disease through examination of the joints and hand photographs; screening audiometry; and pulmonary function assessed statically using spirometry and dynamically using measurement of oxygen desaturation at rest and with exercise. The nurse also conducted the following performance-based measures

Figure 1.1: Study design: The Women's Health and Aging Study

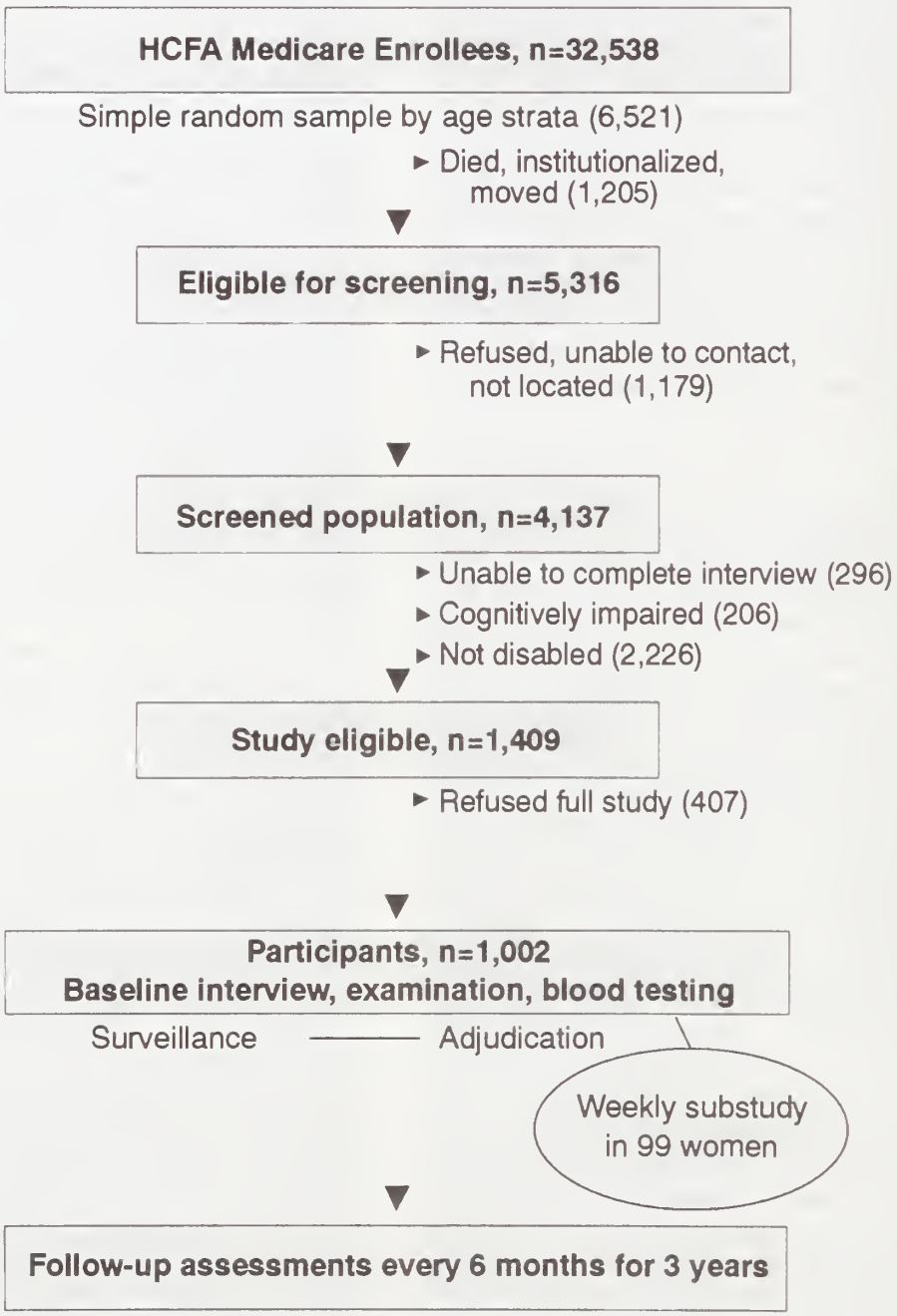
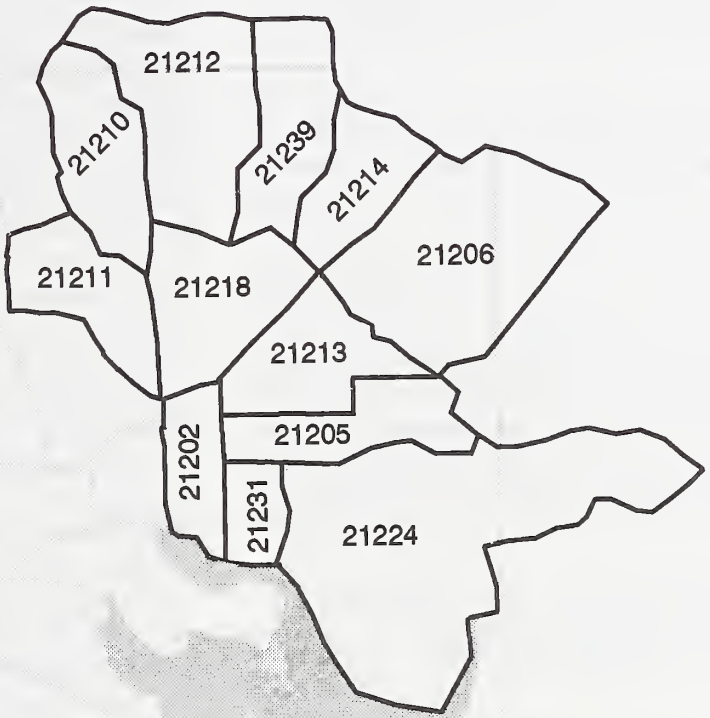


Figure I.2: Map of Baltimore Maryland, showing enrollment area Zip Codes: The Women's Health and Aging Study



in the home: semi-tandem, tandem, and side-by-side stands as measures of static postural stability; strength measures: grip, pinch, and lower extremity strength assessed by dynamometry and upper arm strength by lifting a 10-pound weight over the head; a 4-meter measured walk at usual and rapid pace; single and five repeated chair stands; Purdue Pegboard; and, for those eligible, a graded exercise test (seated step test) while monitored.

Through supplemental funding from Corning Clinical Laboratories, the study also performed phlebotomy on participants who signed a separate informed consent; approximately 75 percent agreed to the procedure. A trained phlebotomist visited the participant's home, by appointment, and phlebotomy was performed following a standardized protocol. After initial processing, Corning Clinical Laboratories analyzed fresh blood specimens for hematologic, biochemical, and hormonal characteristics of participants. Merck Research Laboratories provided support for the creation and maintenance of a blood repository.

Detailed descriptions of the examination instruments and procedures are provided in the relevant chapters of this monograph.

A core element of this study was to characterize the prevalence of the major chronic diseases in older adults, with comparably rigorous ascertainment for each disease. To accomplish this, algorithms were established for each of 16 diseases, utilizing state-of-the-art epidemiologic and clinical criteria for the presence of disease. These algorithms and appropriate references are found in Appendix E. Disease presence was validated through self-report of physician diagnosis of disease, reported symptoms, signs or physiologic measures obtained in the nurse's examination, and medication use. These data were supplemented, as necessary, with confirmation of diagnosis through questionnaires completed by the participant's primary care physician (see Appendix F) and with ongoing surveillance of medical records.

Finally, a small subset of WHAS participants were invited to participate in the Weekly Disability Substudy, a 6-month study aimed at characterizing short-term variability in function and testing the reliability of both self-report and performance indicators of functioning. The study was designed to select a sample of approximately 100 women, with equal numbers of subjects in each of nine cells defined by age (65-74, 75-84 and 85 years and older) and level of disability (two, three, or four domains of disability). The women were visited weekly over 6 months. Overall, 113 women, evenly distributed in the nine cells, agreed to participate in this substudy; 6 dropped out after the first interview and 8 had fewer than 5 visits, effectively creating a final substudy population of 99 women. During weekly interviews, women were asked about physical function and incident acute and chronic diseases or injuries. Selected performance-based tests of function also were administered.

Unique Contributions of the WHAS

No study has evaluated a representative sample of disabled older women living in the community in the breadth and depth attempted by the WHAS. It is hoped that the comprehensive information on the presence and severity of disease, obtained using physiologic and clinical measures, and the rich data characterizing the dimensions of functioning, will make it possible to unravel the complexities of functional decline in older women. In addition, the prospective component of the study (6-month followup interviews over 3 years) will characterize change in function and relate it to underlying changes in disease status, taking into account the impact of medical care, psychosocial factors, and important life events.

We expect this monograph to be of interest to a diverse group of people concerned with issues of aging, chronic disease, functional decline and disability, and provision of long-term care services. The data selected for presention are relevant to those involved in population-based and clinical re-

search, geriatric care, and policy development. The chapters that follow present the baseline descriptive data from the WHAS on the functioning, diseases and other health, psychosocial, service utilization, and demographic characteristics of the one-third most disabled older women living in the community, as well as data from the population from which the study participants were drawn. The WHAS provides unique data on the heterogeneity of function even within the most disabled segment of the population, as well as on adaptations to disability employed by these disabled older women. The in-home nurse's examination also provides substantial depth in terms of describing exercise tolerance and a range of physiologic and disease characteristics. Finally, these data offer important insight into the daily lives of the participants.

Chapter 1 describes the characteristics of the entire screened population, the screening methods and eligibility criteria, and comparisons between those women who were and were not eligible for the WHAS. **Chapters 2, 3 and** 4 describe the heterogeneity of functioning in older, disabled women through both self-report and performance-based measures, and through the compensations adopted to maximize function. **Chapter 5** describes the day-to-day living circumstances and characteristics of these community-dwelling, disabled women. **Chapter 6** provides data on health care utilization and coverage and receipt of preventive services in this population of women, who are likely to be among the greatest consumers of care. **Chapter 7** provides extensive information on the instrumental and emotional support received by these disabled women. **Chapter 8** describes psychosocial characteristics and perceived quality of life. **Chapters 9 and 11 through 14** offer medical history, reported symptoms, and the results of physiologic measures obtained on home examination to characterize presence, manifestations, and severity of cardiovascular, pulmonary, musculoskeletal, and neurologic diseases, and of visual and hearing impairment. **Chapter 10** describes exercise tolerance using both graded exercise testing and self-report, as well as distributions of body mass index and triceps skinfolds. **Chapter 15** offers extensive data on medications used by these disabled older women with high rates of comorbidity. Finally, **Chapter 16** provides insight into hematologic, biochemical, and thyroid function characteristics. Appendices provide technical details of the sample design and disease ascertainment methodology (Appendices A, E, and F). The full instruments of the WHAS are also included to facilitate their use by the scientific community, including screening and baseline questionnaires (Appendix B), and study protocols for the interviewer's objective assessment of physical function (Appendix C) and the nurse's physical examination (Appendix D).

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1

Screening the Community-Dwelling Population for Disability

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As described in the Introduction, an age-stratified sample of women age 65 years and older residing in the community in Baltimore, Maryland was evaluated for eligibility for the Women's Health and Aging Study (WHAS). The objective of the screening was to identify and recruit the one-third most disabled women living in the community.

A 20 to 30 minute home interview using computer assisted personal interviewing techniques was administered to women who agreed to participate in the screening assessment. This screener questionnaire included batteries assessing disability status and cognitive functioning, both of which were used to determine study eligibility. Information was also obtained from participants on demographic characteristics, self-reported health status, and history of physician-diagnosed chronic conditions (see Appendix B for the complete screening interview).

All screening interviews were completed personally by respondents. Women who were too cognitively impaired to respond to the screener questions or who were otherwise unable to complete the screening interview themselves were excluded. Participants completing the screening interview were considered eligible for the WHAS if they reported difficulty in one or more items in two, three, or four domains of disability (see Introduction to this monograph) and had a Mini-Mental State Examination (MMSE) score (Folstein et al., 1975) of 18 or higher. A total of 4,137 women agreed to be screened, 296 of whom could not personally complete the screening interview. Thus, the screening interview was administered to 3,841 women.

Disability Patterns in the Screened Population

Four domains of disability were considered in the screening process: upper extremity, mobility, higher functioning tasks required for independent living in the community, and self-care. The top half of Table 1.1 shows the specific items included in each domain and the percentage of women participating in the screening who reported difficulty for these items. For each task, the participant was asked whether, by herself and without help from another person or special equipment, she had any difficulty. Data are also presented on the percentage of women with difficulty in one or more items in a domain.

The highest rate of difficulty was in the mobility domain, with over 49 percent of screened women reporting difficulty in one or more items. About 22 percent of women reported difficulty in the self-care domain. Rates of difficulty for all individual self-care items were slightly higher than national estimates for women age 65 years and older (Dawson et al., 1987). For example, 8.2 percent of the WHAS population and 6.5 percent

of a national sample of women age 65 years and older had difficulty with dressing, and 3.8 percent of the WHAS population and 1.7 percent of the national population had difficulty with eating. The WHAS population may have a higher rate of disability than the total U.S. population because it is an urban population with a greater proportion of women with low income and education. Consistent with previous work in this field, the prevalence of difficulty in each domain and for specific items increases dramatically with increasing age (Table 1.1).

The bottom half of Table 1.1 shows the distribution of the number of domains in which a participant had difficulty with one or more items. Women who had difficulty in no domains or only one domain were ineligible for the study and constituted 43.7 percent and 20.1 percent of the screened population, respectively. The percent of women with difficulty in no domains dropped steeply with increasing age, from more than 50 percent in those age 65 to 74 years to slightly more than 22 percent of those age 85 years and older. Most of the women with two domains of difficulty had mobility and upper extremity problems, while the majority of women with difficulty in three domains reported problems with these two domains as well as problems with either higher functioning or self-care. The most severely disabled women—those with difficulty in all four domains—constituted about 13 percent of the screened population, but this percentage rose steeply with increasing age, to 30 percent of those age 85 years and older.

The domain approach used in the WHAS to select a moderately to severely disabled study population identified a cohort with diverse patterns and levels of disability. Many combinations of disabilities are represented in the eligible study population. The domain approach to screening was successful in including women with less common patterns of disability who are typically classified as nondisabled using more conventional approaches to disability assessment, such as screening for mobility or self-care disability alone. For example, a small proportion of women with two domains of disability had problems with upper extremity function and either higher functioning or self-care tasks. This important subgroup of women would have been excluded if mobility difficulty, which was extremely common in those eligible for the study, were a fixed requirement for study eligibility.

Table 1.1 also demonstrates how the domain-based screening approach used here worked well to appropriately exclude certain women who would have been eligible if a single criterion, such as self-care difficulty, had been used. For example, a small number of screened women (0.6 percent) reported difficulty in self-care but in no other domains, and thus they were excluded. Closer examination revealed that these women generally reported only a little or some difficulty in bathing or dressing and had no difficulty in tasks such as walking a quarter of a mile, doing heavy housework, and lifting and carrying 10 pounds. Their disability was thus likely to be mild and it was appropriate for them to be excluded from the study.

Demographic and Health Characteristics

Table 1.2 shows demographic characteristics, self-assessed health status, and MMSE score for the total screened population and according to study eligibility status. A slightly lower percentage of the population was age 65 to 74 years than the U.S. female population in 1990 (53 versus 55 percent) and a slightly lower proportion was 85 years and older (10 versus 12 percent) (U.S. Bureau of the Census, 1992). While Black women made up 8 percent of the U.S. female population age 65 years and older (U.S. Bureau of the Census, 1992), they represented one-quarter of the population screened for the WHAS. The screened population had a broad range of educational attainment: a third had less than 9 years of education and nearly a fifth had more than 12 years. Overall, 42 percent of the screened population in the WHAS had 12 or more years of education compared to 56 percent for women age 65 years and older in the United States (*Aging America*, 1991). There was also a wide range of

income; however, one-fifth did not know their income or refused to provide it.

For each category listed in Table 1.2, the distribution of screener status is shown (columns for eligible, non-disabled ineligible, and cognitively impaired ineligible add to 100 percent). For the total population, 33.9 percent were eligible, 62.6 percent were ineligible because they were disabled in only one or no domains, and 3.5 percent were ineligible because of cognitive impairment (MMSE score less than 18). Eligibility ranged from 28 percent for women age 65 to 74 years to 51 percent for women 85 years and older. Higher eligibility rates were seen for African American women, women with less education, and those with lower income. Married women were younger and had lower eligibility. Less than 12 percent of women reporting excellent health were found eligible for the study. In contrast, 80 percent of women reporting poor health were eligible, and an additional 7 percent of these women were cognitively impaired. The mean MMSE score was slightly higher for the non-disabled ineligible than for those who were eligible. Women classified as cognitively impaired who were administered the test had an MMSE range of 0 to 17 and a mean score of 12.5.

Table 1.3 shows the prevalence of self-reported chronic conditions for the total screened population and according to screener status. For all conditions listed there is a substantially higher prevalence in women eligible for the study than in the non-disabled ineligible. The absolute difference in prevalence rates is greater for relatively common diseases such as myocardial infarction, angina, diabetes, arthritis, and hearing problems. In contrast, the ratio of prevalence rates in the eligible versus non-disabled ineligible is greater for rarer conditions such as congestive heart failure, stroke, and Parkinson's disease. Women excluded from the study because they scored 17 or less on the MMSE had prevalence rates that were similar to the ineligible non-disabled group for most conditions. For stroke, hip fracture, and hearing problems, conditions that have previously been demonstrated to be associated with cognitive impairment, the prevalence was substantially higher in the cognitively impaired group than in the ineligible non-disabled group.

Characteristics of Participants and Nonparticipants Among Women Eligible for the Study

Table 1.4 shows sociodemographic and health characteristics of the 1,409 women who completed the screening interview and were found to be eligible for the study. It also presents this information according to whether women participated in the full baseline evaluation or declined to participate further. Of the 1,409 eligible screener respondents, 1,002 (71.1 percent) participated in the full study. Study participation was defined as completing both the baseline interview and the nurse's examination about 2 weeks later.

Overall, women who participated in the study were very similar to the total eligible population on the characteristics shown in Table 1.4 (first two sets of columns). However, in comparing the eligible participants to nonparticipants (second and third sets of columns), certain differences were seen. Among participants, a larger proportion were age 65 to 74 years and a smaller proportion were age 85 years and older. Blacks participated at a higher rate than Whites, with 28 percent of participants and 20 percent of nonparticipants being Black. The participant group included a somewhat higher proportion with more than 12 years of school, with only slightly lower proportions in the other education subgroups. A substantially higher proportion of nonparticipants did not know or refused to report their income. Marital status was quite similar in those who did and did not participate, and there was little difference in the distribution of self-reported health status among those who did and did not participate in the full study. Mean MMSE score was similar for both groups. In summary, there were no major disparities between eligible women who agreed to participate in the full study and those who declined. The

group who entered the study was somewhat younger, more often African American, and more often had greater than a high school education than the group that declined, but the two groups had similar marital status, self-reported health, and cognitive function.

Classification of Disability Categories in This Monograph

As stated above, a screening procedure that assesses multiple domains of function was valuable in selecting a heterogeneous group of moderately to severely disabled women for this study. For the purpose of presenting descriptive data in this monograph, however, a more conventional approach to disability classification is used. Data are presented for study-eligible participants according to three levels of disability: receipt of help from a person to perform one or more basic activities of daily living (ADLs) (bathing, dressing, eating, using the toilet, getting in or out of bed or chairs), no receipt of help but difficulty with one or more ADLs, and moderate disability. The last group includes those who meet the criteria for the study but have no difficulty with ADLs.

This classification system focuses on ADLs because they are the most commonly assessed measure of disability in old age. Clinicians and other care providers, researchers, and policy makers all have experience with these categories of disability and understand the functional problems and general characteristics of older people who have these disabilities. The category termed moderate disability includes those women disabled enough to qualify for the study but not so disabled as to have difficulty with basic self-care activities. It therefore includes women with difficulty in two or three of the domains assessed in the screening interview.

Table 1.5 shows the disability patterns (excluding ADL tasks) for ineligible, non-cognitively impaired women and for women who were eligible and participated in the full study, according to the three categories of disability described above. These data are particularly useful for understanding functional characteristics of eligible women with moderate disability and comparing them with women who were ineligible for the study. Overall, nearly all women classified as moderately disabled had upper extremity problems, virtually all reported difficulty with one or more items in the mobility domain, and almost half had difficulty in the higher functioning domain. Comparing eligible women with moderate disability with women who reported some disability but were ineligible for the study, more than 83 percent of those with moderate disability had difficulty in the upper extremity domain as compared with 22 percent of ineligible women with one domain of disability. More than 99 percent of the moderately disabled women had difficulty in the mobility domain compared with 71 percent of women with difficulty in one domain. Furthermore, more than 60 percent of women with moderate disability had two or more areas of difficulty in mobility, compared with less than one-quarter of women with difficulty in one domain. Finally, there was almost no difficulty in the higher functioning domain in the women with one domain of difficulty, while more than 40 percent of moderately disabled women had problems with this domain. Table 1.5 also shows the total number of tasks for which women reported difficulty; these distributions are substantially different stepping from one domain through the most severe level of disability.

These data clearly demonstrate that women with moderate disability were not as disabled as those with difficulty in ADLs, but they were more disabled than ineligible women who had difficulty in one domain only. The question still remains, however, as to whether there were women with one domain of functional difficulty whom some observers might classify as more disabled than certain study-eligible women with two domains of difficulty. The goal of screening was to have no woman classified as eligible for the study who was less disabled than a noneligible woman, and no woman classified as ineligible who was more disabled than an eligible woman. Using a screening instrument, it is rarely possible to perfectly classify individuals as

to any measure of health or disease, and it is likely that a small number of women with mild to moderate disability who should have been included were excluded from this study. However, there is no gold standard by which to measure this. When assessing multiple domains of disability it is sometimes quite subjective as to what combination of disabilities is more severe, and, in fact, which specific health state or pattern of disability individuals would find less desirable may be a matter of personal choice.

Format of Monograph Tables

This chapter describes the population who were screened to obtain a sample of the one-third most disabled women living in the community, the study population for the WHAS. Beginning with Chapter 2, all data presented are limited to the 1,002 women who make up the WHAS study population. Most tables present descriptive information for the total study population and within the three age strata and the three disability groups described above. In general, the tables show the actual number of women evaluated, but all other data are weighted to give estimates for the target population the women in the study represent. Appendix A describes the sampling strategy and gives general variance estimates that may be used to estimate the precision of the population rates and means shown in all tables.

For a small number of variables, there was a large age gradient in rates; in these cases the information according to disability status is presented both as unadjusted and age-adjusted rates. For most variables, age adjustment made little difference compared to the unadjusted rates for the disability categories, and only unadjusted rates according to disability status are presented.

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Table 1.1: Disability Patterns of Screened Population for Four Domains of Functioning[1,2]

Disability Status	Total (N=3841)	Age 65-74 (N=1777)	Age 75-84 (N=1170)	Age 85+ (N=894)
Difficulty for domains and individual tasks (%)				
Upper extremity domain	34.5	29.6	37.0	51.1
Raising your arms up over your head[3]	11.0	9.8	12.0	14.0
Using your fingers to grasp or handle[3]	15.6	13.3	17.5	20.8
Lifting or carrying something as heavy as 10 pounds, for example a bag of groceries[3]	25.3	20.9	27.3	41.0
Mobility domain	49.6	41.5	54.9	71.7
Walking for a quarter of a mile, that is about 2 or 3 blocks[3]	35.1	28.0	38.9	57.9
Walking up 10 steps without resting[3]	23.1	17.6	26.2	39.9
Getting in and out of bed or chairs[3]	14.5	11.4	15.1	27.6
Doing heavy housework such as washing windows, walls or floors[4]	37.7	30.5	42.2	58.8
Higher functioning domain	22.0	14.2	25.6	48.6
Using the telephone[4]	4.7	2.4	5.5	14.1
Doing light housework such as doing dishes, straightening up or light cleaning[4]	10.6	7.4	11.6	24.0
Preparing your own meals[4]	8.2	4.8	9.2	21.5
Shopping for personal items, such as toilet items or medicine[4]	17.6	10.9	19.7	44.2
Self-care domain	21.8	15.8	24.0	45.0
Bathing or showering[3]	17.6	12.4	19.2	38.7
Dressing[3]	8.2	5.7	9.4	17.2
Eating, for example, holding a fork, cutting your food, or drinking from a glass[3]	3.8	2.5	4.7	7.0
Using the toilet, including getting to the toilet[3]	8.0	4.9	9.0	20.1
Disability by number of domains and patterns of difficulty (%)[5]				
No domains	43.7	51.7	38.2	22.3
One domain[6]	20.1	19.5	22.3	15.2
Upper extremity	4.5	4.8	4.6	3.0
Mobility	14.1	13.7	15.8	9.9
Higher functioning	0.9	0.4	1.4	1.1
Self-care	0.6	0.6	0.4	1.1
Two domains[6]	13.6	13.0	13.9	16.4
Upper extremity and mobility	8.4	8.8	8.1	7.8
Upper extremity and higher functioning	0.1	0.2	0.0	0.0
Upper extremity and self-care	0.5	0.6	0.4	0.5
Mobility and higher functioning	2.5	1.6	2.9	5.1
Mobility and self-care	2.1	1.7	2.4	3.1
Higher functioning and self-care	0.0	0.1	0.0	0.0
Three domains[6]	9.9	7.7	11.3	16.3
Upper extremity, mobility and higher functioning	4.0	3.0	5.0	5.9
Upper extremity, mobility and self-care	4.1	3.8	4.5	3.8
Upper extremity, higher functioning and self-care	0.1	0.2	0.0	0.3
Mobility, higher functioning and self-care	1.7	0.7	1.8	6.3
Four domains	12.7	8.1	14.4	29.9

(Women's Health and Aging Study, screening interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] The question is in the form "By yourself, that is without help from another person or special equipment, do you have any difficulty . . . ?"
[4] The question is in the form "Because of a health or physical problem, do you have any difficulty . . . (by yourself)?"
[5] Sum of no domains, one domain, two domains, three domains and four domains may not add up to 100% due to rounding.
[6] Categories may not add up to this rate due to rounding.

Table 1.2: Screener Status According to Demographic Characteristics, Health Status, and Cognitive Functioning[1,2]

Demographics; Health and Cognitive Status	N	Percent of Total Screened[3]	Screener Status[4]		
			Percent Eligible	Percent Ineligible	
				Non-Disabled	Cognitively Impaired[5]
Total	3841	100.0	33.9	62.6	3.5
Age					
65-74	1777	52.9	28.4	70.7	0.9
75-84	1170	36.7	37.0	58.7	4.3
85+	894	10.4	50.8	35.3	14.0
Race					
Black	982	25.0	35.6	58.6	5.8
White	2838	74.5	33.3	64.0	2.7
Other	19	0.6	34.8	56.6	8.6
Years of education[6]					
0-8	1433	35.0	39.8	54.6	5.6
9-11	813	22.8	35.2	63.4	1.5
12	852	23.6	27.6	70.5	2.0
More than 12	693	18.6	29.7	69.1	1.2
Income[7]					
Less than $6,000	484	11.9	44.7	50.2	5.1
$6,000-7,999	506	13.0	41.5	56.4	2.1
$8,000-9,999	344	8.9	38.7	59.1	2.2
$10,000-14,999	513	13.8	33.5	65.1	1.4
$15,000-24,999	556	15.6	29.0	69.3	1.7
$25,000-34,999	263	7.2	28.2	70.5	1.4
$35,000 or more	356	9.8	25.6	73.0	1.4
Unknown/refused	819	19.8	30.4	60.8	8.8
Marital status[8]					
Married	1053	31.0	27.8	70.6	1.5
Widowed	2201	53.2	36.2	59.0	4.9
Separated	80	2.3	42.4	52.4	5.2
Divorced	216	6.2	39.9	59.2	0.9
Never married	285	7.3	35.6	61.5	2.9
At the present time, would you say that your health is . . . ?					
Excellent	370	9.9	11.8	86.7	1.6
Very good	1030	27.5	16.5	81.1	2.4
Good	1275	33.4	30.5	66.0	3.6
Fair	844	21.7	55.2	40.6	4.2
Poor	301	7.6	80.3	12.9	6.8
	N	Mean (Range)	Mean (Range)	Mean (Range)	Mean (Range)
Mini-Mental State Examination Score[9]	3807	26.6 (0-30)	26.6 (18-30)	27.3 (18-30)	12.5 (0-17)

(Women's Health and Aging Study, screening interview, 1992-1995)

[1] All variables except income have less than 2% missing data. For these variables results are based on non-missing data.
[2] Percents and means are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] For each row "Eligible," "Non-disabled", and "Cognitively Impaired" may not add up to 100% due to rounding.
[5] Excludes women who were not administered the screener due to extreme cognitive impairment.
[6] What is the highest grade in school or year of college that you completed?
[7] What was your household's total income from all sources, before taxes in [PREVIOUS YEAR]? Social Security, retirement income, job earnings, public assistance, help from relatives, rent from property, and any other income should be included. (If the subject did not know or refused to respond, she was shown a card with income ranges and asked to pick a range.)
[8] Are you now married, or are you widowed, separated, divorced, or have you never been married?
[9] Folstein MF, Folstein SE, McHugh PR. (1975). 'Mini-Mental State.' A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 12:189-98.

Table 1.3: Percent Reporting Chronic Conditions According to Screener Status[1,2,3]

Condition	Total (N = 3841)	Screener Status		
		Eligible (N = 1409)	Ineligible	
			Non-Disabled (N = 2226)	Cognitively Impaired[4] (N = 206)
Heart attack or myocardial infarction	12.6	20.9	8.1	13.2
Angina	12.5	20.8	8.5	4.7
Congestive heart failure	4.3	8.3	2.0	7.3
High blood pressure	52.5	59.8	48.7	50.0
Other heart disease	10.2	14.8	7.9	4.8
Diabetes	14.1	21.0	10.1	19.6
Arthritis	57.6	76.5	47.8	49.3
Stroke	8.0	14.9	3.7	17.3
Cancer	13.3	16.1	12.1	6.8
Broken or fractured hip	4.7	7.3	2.7	16.5
Parkinson's disease	1.0	2.3	0.3	2.2
Lung disease, such as emphysema or chronic bronchitis	10.1	16.9	6.7	5.9
Hearing problems	18.9	27.1	14.0	26.8
Vision problems	73.0	79.6	69.4	72.8

(Women's Health and Aging Study, screening interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] The question is in the form "Has a doctor ever told you that you had (a) (any) . . . ?"
[4] Excludes women who were not administered the screener due to extreme cognitive impairment.

Table 1.4: Demographic Characteristics, Health Status, and Cognitive Functioning for All Eligible Women and According to Participation Status in Baseline Assessment[1,2]

Demographics; Health and Cognitive Status[3]	Total Eligible		Participated		Did Not Participate	
	N	Percent	N	Percent	N	Percent
Total	1409	100.0	1002	100.0	407	100.0
Age						
65-74	506	35.9	388	38.7	118	29.0
75-84	434	30.8	311	31.0	123	30.2
85 +	469	33.3	303	30.2	166	40.8
Race						
Black	366	26.0	284	28.3	82	20.1
White	1037	73.6	713	71.2	324	79.6
Other	6	0.4	5	0.5	1	0.2
Years of education[4]						
0-8	611	43.7	432	43.3	179	44.9
9-11	260	18.6	175	17.5	84	21.1
12	229	16.4	178	17.8	85	21.3
More than 12	297	21.3	213	21.3	51	12.8
Income[5]						
Less than $6,000	220	15.6	171	17.1	49	12.0
$6,000-7,999	222	15.8	169	16.9	53	13.0
$8,000-9,999	140	9.9	98	9.8	42	10.3
$10,000-14,999	192	13.6	140	14.0	52	12.8
$15,000-24,999	173	12.3	144	14.4	29	7.1
$25,000-34,999	80	5.7	66	6.6	14	3.4
$35,000 or more	100	7.1	73	7.3	27	6.6
Unknown/refused	282	20.0	141	14.1	141	34.6
Marital status[6]						
Married	299	21.2	212	21.2	87	21.4
Widowed	870	61.8	614	61.3	256	62.9
Separated	34	2.4	27	2.7	7	1.7
Divorced	89	6.3	71	7.1	18	4.4
Never married	116	8.2	77	7.7	39	9.6
At the present time, would you say that your **health** is . . . ?						
Excellent	59	4.2	40	4.0	19	4.7
Very good	203	14.5	145	14.5	58	14.3
Good	430	30.6	300	30.1	130	32.0
Fair	477	34.0	339	34.0	138	34.0
Poor	235	16.7	174	17.4	61	15.0
	N	Mean (Range)	N	Mean (Range)	N	Mean (Range)
Mini-Mental State Examination Score[7]	1404	26.2 (18-30)	1002	26.4 (18-30)	402	25.7 (18-30)

(Women's Health and Aging Study, screening interview, 1992-1995)

[1] All variables except income have less than 1% missing data. For these variables results are based on non-missing data.
[2] Percents and means are based on unweighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] What is the highest grade in school or year of college that you completed?
[5] What was your household's total income from all sources, before taxes in [PREVIOUS YEAR]? Social Security, retirement income, job earnings, public assistance, help from relatives, rent from property, and any other income should be included. (If the subject did not know or refused to respond, she was shown a card with income ranges and asked to pick a range.)
[6] Are you now married, or are you widowed, separated, divorced, or have you never been married?
[7] Folstein MF, Folstein SE, McHugh PR. (1975). 'Mini-Mental State.' A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 12:189-98.

Table 1.5: Disability Patterns for Study Ineligible and Eligible Participants[1]

Tasks with Difficulty (%)	Eligibility Status and Disability Level				
	Ineligible for Study[2]		Eligible, Participated in Baseline		
				ADL Difficulty	
	Total (N=2226)	One Domain (N=714)	Moderate[3] (N=343)	Receives No Help (N=478)	Receives Help (N=181)
Upper extremity domain					
Raising your arms up over your head[4]	1.7	5.2	20.4	28.0	45.9
Using your fingers to grasp or handle[4]	3.8	11.8	25.7	39.2	49.2
Lifting or carrying something as heavy as 10 pounds, for example a bag of groceries[4]	2.2	6.9	61.5	65.1	79.2
Number of tasks[5]					
0	93.0	78.3	16.9	19.7	7.7
1	6.4	19.9	62.1	42.7	34.8
2+	0.6	1.8	21.0	37.7	57.5
Mobility domain					
Walking for a quarter of a mile, that is about 2 or 3 blocks[4]	12.6	39.4	66.7	77.6	88.4
Walking up 10 steps without resting[4]	5.1	15.9	40.6	56.9	78.1
Getting in and out of bed or chairs[4]	2.2	6.7	1.8	52.3	61.9
Doing heavy housework such as washing windows, walls or floors[6]	13.0	40.3	78.7	81.8	95.6
Number of tasks[5]					
0	77.2	29.0	0.9	2.9	0.6
1	15.0	46.8	37.6	13.4	5.5
2+	7.8	24.2	61.5	83.7	93.9
Higher functioning domain					
Using the telephone[6]	0.8	2.5	7.9	11.3	24.3
Doing light housework such as doing dishes, straightening up or light cleaning[6]	0.0	0.1	10.2	25.5	69.1
Preparing your own meals[6]	0.1	0.4	6.4	15.9	65.8
Shopping for personal items, such as toilet items or medicine[6]	0.6	1.7	29.5	46.7	81.2
Number of tasks[5]					
0	98.7	95.9	58.6	42.1	9.9
1	1.1	3.4	32.1	30.8	12.2
2+	0.2	0.7	9.3	27.2	77.9
Total number of tasks[5,7]					
0	67.9	-	-	-	-
1	23.4	73.0	-	-	-
2	6.7	20.9	27.1	6.9	0.6
3	1.7	5.2	27.1	9.2	1.1
4	0.4	1.0	24.5	13.2	1.1
5	0.0	0.0	13.1	14.0	3.3
6	0.0	0.0	5.3	13.8	12.7
7	0.0	0.0	2.0	12.6	8.3
8+	0.0	0.0	0.9	30.3	72.9

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data. Table uses unweighted data.
[2] Excludes cognitively impaired women.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The screener question is in the form "By yourself, that is, without help from another person or special equipment, do you have any difficulty . . . ?" For study participants the presence of the condition was confirmed in the baseline interview.
[5] Categories may not add up to 100% due to rounding.
[6] The question is in the form "Because of a health or physical problem, do you have any difficulty . . . (by yourself)?"
[7] Based on items from all four domains of disability (Table 1.1).

2

Disability: The Spectrum of Function in Moderately to Severely Disabled Older Women

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Participants in the Women's Health and Aging Study (WHAS) represent the one-third most disabled older women living in the community. This chapter presents the basic demographic characteristics of this population and further characterizes their functional status and disability, including physical and cognitive functioning. The items on physical functioning were drawn from a number of sources. Questions about activities of daily living (ADLs) are based on a modified version of the Activities of Daily Living Scale (Katz et al., 1963). The questions on instrumental activities of daily living (IADLs) are adapted from the work of Lawton and Brody (1969). Questions on mobility (walking specific distances, walking up or down stairs) and ability to perform heavy housework are adapted from the Rosow and Breslau scale (1966). The question on lifting or carrying 10 pounds is from the physical function scale developed by Nagi (1976). For each of 20 tasks, the percent of the study population reporting any difficulty as well as the level of difficulty reported is presented. Even though all women in the study are disabled, there is great diversity in the type and amount of functional limitation.

Table 2.1 shows the demographic characteristics of older disabled women and the relationship of disability status and age. These weighted data indicate that 15 percent of the disabled population in the geographic target area for this study was age 85 years and older. Table 1.4, which contains unweighted data, shows that 30 percent of the actual study participants were in this age group. For other demographic data presented in Table 2.1, there are minimal differences from the unweighted data in Table 1.4. Twenty-eight percent of women were Black and 71 percent were White. Racial composition, however, varied by age group, with the proportion of African American women decreasing with increasing age. There was a wide spectrum of both educational attainment and household income levels among these disabled women. For example, at the two extremes, almost 41 percent had less than a ninth-grade education and 18 percent had more than a high school education. Thirty-four percent of the total study population reported incomes under $8,000 per year, 23 percent incomes from $8,000 to 14,999, and 30 percent incomes of $15,000 or greater; 13 percent did not know their incomes or refused to report them. The oldest women and those receiving help with ADLs were more likely than others not to provide income information. Notably, the group who received help with ADLs had the highest proportion of women with incomes below $6,000.

A high proportion of women in the study were widowed, particularly among the oldest group. At the time of the study only 25 percent were married, and this number decreased dramatically

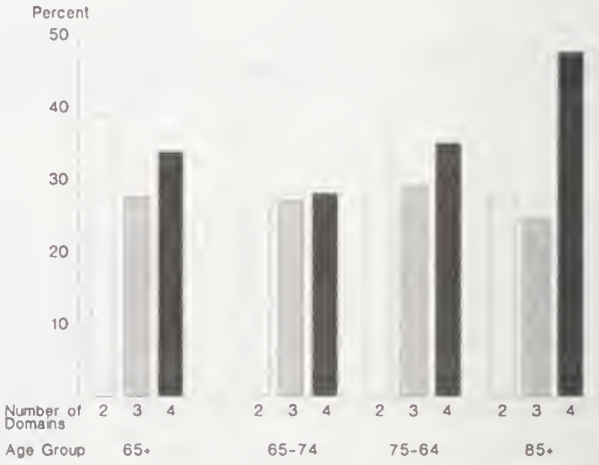
with age, from 34 percent of those age 65 to 74 years to 6 percent of those age 85 years and older (Table 2.1).

Severity of disability and age were strongly associated. The oldest old had the highest proportion with any ADL difficulty and the highest proportion who received help with ADLs. Seventy-five percent of the oldest women reported any ADL difficulty, and 22 percent received help, while only 25 percent of women age 85 years and older had moderate disability. In contrast, among those age 65 to 74 years, 61 percent had any ADL difficulties and 15 percent received help, while 39 percent of this age group had moderate disability (Table 2.1).

Study participants also showed diversity in terms of the combinations of disability present. For example, Figure 2.1 shows that in these disabled older women living in the community nearly 40 percent reported difficulty in two domains, 28 percent in three domains, and the remaining one-third in four domains of functioning. Figure 2.1 also shows that the distribution of severity of disability varied by age group. More than 40 percent of women age 65 to 74 years reported difficulty in only two domains, while nearly 50 percent of those age 85 years and older were disabled in four domains. Not surprisingly, high proportions of women reported difficulty with mobility and tasks demanding exercise tolerance (Table 2.2). For example, 83 percent reported difficulty stooping, crouching, or kneeling, and 74 percent reported difficulty walking for a quarter of a mile. Substantial proportions, 38 and 26 percent, respectively, were completely unable to do these activities. More than half of the women reported difficulty climbing up 10 steps without resting and one-fourth reported difficulty walking across a small room.

Across several mobility-related tasks, the prevalence of women reporting difficulty tended to increase modestly with increasing age, while inability to perform the task tended to increase more dramatically. However, there was greater variation by age on some tasks, such as walking across a small room, than on others. Overall, variation in difficulty with specific tasks appeared to be greater by disability level than by age. For example, of those who reported receiving help with ADLs, 60 percent had difficulty walking across a small room, and 27 percent were unable to do this very basic task. For those with moderate disability, 7 percent reported difficulty and 0.1 percent were unable to perform the task.

Figure 2.1: Number of Domains of Disability for Total Population and by Age Group[1]



(Women's Health and Aging Study, baseline interview, 1992-1995)

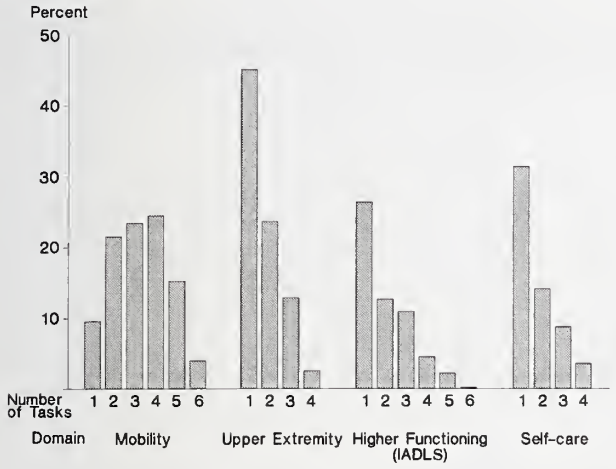
[1] Based on weighted data.

Ninety percent of the women with mobility problems had difficulty in two or more tasks in this domain (Figure 2.2). In contrast, a high proportion of those with difficulty in upper extremity tasks, IADLs, or self-care had difficulty in only one task out of the four to six assessed. Less than 15 percent of the study population had difficulty in more than two self-care tasks.

Although these women reside in the community, they had a high frequency of difficulty with many critical aspects of functioning. Table 2.3 shows upper extremity-related functioning. About 66 percent of the study population reported difficulty lifting or carrying a 10-pound bag of groceries and almost 12 percent had difficulty turning a key in a lock. There were few differences by age. Variations in reporting difficulty did occur by disability level, however. Women with ADL difficulty who received help were more likely than those less

disabled to have difficulty with upper extremity tasks. Over 40 percent said they were unable to lift 10 pounds and 20 percent said they could not turn a key in a lock.

Figure 2.2: Number of Tasks in Which Participants Reported Difficulty for Each Domain[1]



(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] Based on weighted data.

Table 2.4 shows the prevalence of difficulty in IADLs in this disabled population. These tasks are viewed as important components of routine daily life (Lawton and Brody, 1969). Age appears to be an important correlate of difficulty for many of these tasks and activities. Sixty-five percent of women age 85 years and older had difficulty shopping for personal items, and half were unable to shop for themselves. One-fourth of the oldest women had difficulty preparing their own meals, and 18 percent could not do this. Overall, of those who reported difficulty, a higher percentage were unable to perform these IADL tasks than was the case for tasks in other areas of functioning. For example, 41 percent of the total population reported difficulty shopping; two-thirds of these were unable to shop for themselves. Similarly, half of those with difficulty managing money reported being unable to do it, and over half of those with difficulty preparing meals said they could not prepare them.

Finally, Table 2.5 illustrates the severity of disability found within the subset of this disabled population with difficulty in ADLs. Inability to do ADLs was relatively rare (under 5 percent), with the exception of bathing or showering (12 percent). A slight to moderate age-gradient in prevalence of difficulty was apparent. The association with severity of disability was much more pronounced, however. For example, prevalence of difficulty with bathing or showering rose from 62 percent for those with ADL difficulty but receiving no help to 91 percent of those receiving help with ADLs. Prevalence of difficulty dressing, using the toilet, and eating was twofold higher in those receiving help with ADLs compared with those who had difficulty but received no help.

Summary

The data in Tables 2.2 through 2.5 present the frequency of difficulty in specific tasks among the one-third most disabled older women living in the community. Figures 2.1 and 2.2 provide some insight into diversity of functional status among these women. This includes difficulty with functioning in multiple domains, as well as in varying numbers of tasks within a domain. As demonstrated in Chapter 1, the population of disabled women clearly reported poorer functioning than an age-comparable cross section of elderly women. Yet even among this population of moderately to severely disabled women, there is a broad spectrum of difficulty and dependency in a wide variety of tasks.

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Table 2.1: Demographic Characteristics and Cognitive Functioning of Participants in Baseline Assessment[1,2]

Demographics, Disability, and Cognitive Functioning[3]	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[4] (N = 343)	ADL Difficulty	
						Receives No Help (N = 378)	Receives Help (N = 181)
Age (%)							
65-74	44.2				49.1	42.6	38.2
75-84	40.7				40.2	40.6	42.2
85 +	15.1				10.7	16.8	19.7
Disability level (%)							
Moderate[4]	35.4	39.4	34.9	25.0			
ADL difficulty: receives no help	47.5	45.9	47.4	52.8			
ADL difficulty: receives help	17.1	14.8	17.7	22.3			
Race (%)							
Black	28.3	33.0	26.4	19.7	32.4	23.1	33.9
White	71.1	65.6	73.6	80.3	67.2	76.2	65.0
Other	0.6	1.4	0.0	0.0	0.4	0.7	1.1
Years of education[5] (%)							
0-8	40.5	33.5	44.9	49.4	41.0	38.7	44.7
9-11	23.1	29.9	19.9	11.5	23.7	22.9	22.3
12	18.3	21.9	14.3	18.5	19.9	16.5	19.9
More than 12	18.1	14.8	20.9	20.6	15.5	21.9	13.1
Income[6] (%)							
Less than $6,000	17.4	16.9	19.2	14.0	16.3	16.5	22.0
$6,000-7,999	16.8	15.9	17.6	17.5	18.7	16.9	12.8
$8,000-9,999	9.7	10.2	9.2	9.6	9.0	11.4	6.6
$10,000-14,999	13.2	14.5	11.1	14.8	12.4	12.8	15.9
$15,000-24,999	15.5	18.0	15.3	8.9	17.6	15.9	10.2
$25,000-34,999	6.9	7.0	7.5	5.1	6.2	6.9	8.5
$35,000 or more	7.9	7.2	8.8	7.6	6.4	9.4	6.7
Unknown/refused	12.6	10.4	11.3	22.6	13.4	10.4	17.3
Marital status[7] (%)							
Married	24.5	34.1	20.7	6.3	25.9	21.7	29.2
Widowed	57.3	43.6	64.9	76.6	52.9	60.2	58.2
Separated	3.1	6.0	1.1	0.0	3.9	2.6	2.8
Divorced	7.7	10.9	5.6	4.0	8.4	8.6	3.6
Never married	7.5	5.4	7.7	13.2	9.0	6.9	6.3
Mini-Mental State Examination Score (Mean)[8]	26.7	27.2	26.6	25.1	26.6	27.0	25.8

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables except income have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[5] What is the highest grade in school or year of college that you completed?
[6] What was your household's total income from all sources, before taxes in [PREVIOUS YEAR]? Social Security, retirement income, job earnings, public assistance, help from relatives, rent from property, and any other income should be included. (If the subject did not know or refused to respond, she was shown a card with income ranges and asked to pick a range.)
[7] Are you now married, or are you widowed, separated, divorced, or have you never been married?
[8] Folstein MF, Folstein SE, McHugh PR. (1975). 'Mini-Mental State.' A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 12:189-98.

Table 2.2: Percent of Women Reporting Difficulty in Mobility-Related Tasks and Level of Difficulty Reported[1,2]

Task and Level of Difficulty	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Stooping, crouching, or kneeling[4]	82.6	84.5	82.1	78.1	68.2	89.5	93.1
Level of difficulty[5,6]							
A little	10.3	11.7	9.8	7.5	14.4	8.4	7.1
Some	14.0	17.3	12.3	8.9	16.6	15.2	5.2
A lot	20.7	23.9	20.4	11.8	16.0	25.2	17.6
Unable to do	37.5	31.6	39.6	49.4	20.9	40.7	63.2
Doing heavy housework such as washing windows, walls, or floors[7]	81.6	80.4	82.8	82.0	77.1	79.7	96.4
Level of difficulty[5,6]							
A little	6.4	8.4	5.5	2.7	10.5	5.4	0.7
Some	9.2	11.5	8.5	4.0	11.0	10.1	2.7
A lot	11.1	15.6	8.5	4.6	15.7	10.4	3.5
Unable to do	54.8	44.6	60.3	70.1	39.9	53.7	89.0
Walking for a quarter of a mile, that is about 2 or 3 blocks[8]	74.4	69.7	76.5	82.4	66.0	75.4	89.0
Level of difficulty[5,6]							
A little	13.7	12.9	16.4	9.1	20.0	12.5	4.2
Some	14.8	14.8	16.3	11.1	17.5	13.9	11.8
A lot	19.1	20.7	19.6	13.3	17.2	22.6	13.6
Unable to do	26.3	21.0	24.3	47.4	11.2	25.9	58.8
Walking up 10 steps without resting[8]	51.9	49.3	53.3	55.3	37.2	53.5	77.6
Level of difficulty[5,6]							
A little	8.4	6.6	10.8	7.2	8.9	9.2	5.2
Some	15.0	17.4	13.7	11.7	14.8	15.4	14.3
A lot	15.1	16.6	13.8	14.4	9.4	17.1	21.4
Unable to do	13.2	8.8	15.1	21.5	4.1	11.6	36.7
Walking across a small room[4]	25.5	19.4	25.2	44.1	7.2	26.6	60.0
Level of difficulty[5,6]							
A little	4.4	2.5	4.4	9.8	3.0	5.1	5.3
Some	8.4	6.2	8.5	14.8	3.3	10.6	13.1
A lot	5.4	4.8	4.7	9.3	0.9	5.7	14.0
Unable to do	7.0	5.6	7.6	9.4	0.1	4.8	27.2

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question is in the form "By yourself, that is, without help from another person or special equipment, do you have any difficulty . . . ?"
[5] How much difficulty do you have?
[6] The percents of participants reporting their levels of difficulty may not add up to the percent reporting difficulty due to (1) rounding (2) level of difficulty not reported.
[7] The screener question is in the form "Because of a health or physical problem, do you have any difficulty . . . ?" The presence of the condition was confirmed in the baseline interview.
[8] The screener question is in the form "By yourself, that is, without help from another person or special equipment, do you have any difficulty . . . ?" The presence of the condition was confirmed in the baseline interview.

Table 2.3: Percent of Women Reporting Difficulty in Upper Extremity-Related Tasks and Level of Difficulty Reported[1,2]

Task and Level of Difficulty	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Lifting or carrying something as heavy as 10 pounds, for example a bag of groceries[4]	65.7	67.0	66.4	59.8	62.9	63.5	77.5
Level of difficulty[5,6]							
A little	16.5	18.6	16.6	9.9	20.9	15.5	10.3
Some	16.7	18.2	17.3	10.6	19.4	16.5	11.8
A lot	12.0	14.0	11.3	7.6	10.9	12.1	13.8
Unable to do	20.1	15.6	20.9	31.4	11.3	19.0	41.6
Using your fingers to grasp or handle[4]	36.5	35.8	38.8	32.3	26.4	38.9	50.6
Level of difficulty[5,6]							
A little	15.9	16.5	15.4	15.7	16.5	17.0	11.8
Some	12.1	12.0	14.1	6.9	7.2	14.0	16.7
A lot	7.6	6.3	8.7	8.6	2.4	7.8	17.9
Unable to do	0.9	1.0	0.6	1.1	0.4	0.0	4.2
Raising your arms up over your head[4]	28.4	30.6	27.9	23.0	20.5	27.7	46.4
Level of difficulty[5,6]							
A little	9.2	10.6	8.3	7.4	8.8	7.4	15.1
Some	8.6	9.7	8.3	6.4	6.4	10.9	7.1
A lot	6.2	6.4	6.2	5.2	4.5	5.1	12.5
Unable to do	4.2	3.9	4.7	3.7	0.6	4.2	11.6
Turning a key in a lock[7]	11.5	9.2	13.0	13.9	4.5	8.9	33.6
Level of difficulty[5,6]							
A little	2.9	3.3	2.6	2.7	2.5	3.3	2.9
Some	2.9	2.4	3.6	2.4	1.5	2.7	6.4
A lot	1.9	1.2	2.8	1.3	0.0	2.4	4.4
Unable to do	3.8	2.4	4.0	7.5	0.5	0.6	19.9

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The screener question is in the form "By yourself, that is, without help from another person or special equipment, do you have any difficulty . . . ?" The presence of the condition was confirmed in the baseline interview.
[5] How much difficulty do you have?
[6] The percents of participants reporting their levels of difficulty may not add up to the percent reporting difficulty due to (1) rounding (2) level of difficulty not reported.
[7] The question is in the form "By yourself, that is, without help from another person or special equipment, do you have any difficulty . . . ?"

Table 2.4: Percent of Women Reporting Difficulty in Instrumental ADLs and Level of Difficulty Reported[1,2]

Task and Level of Difficulty	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Shopping for personal items, such as toilet items or medicine[4]	40.9	33.6	39.7	65.0	26.0	39.2	76.4
Level of difficulty[5,6]							
A little	4.1	3.9	5.0	2.0	4.8	3.8	3.4
Some	5.2	4.7	4.4	8.5	5.0	5.5	4.6
A lot	4.7	3.6	6.1	4.3	3.1	5.7	5.4
Unable to do	26.8	21.3	24.0	50.2	13.1	24.3	62.2
Doing light housework such as doing dishes, straightening up or light cleaning[4]	24.3	21.9	25.0	29.8	7.3	21.8	66.6
Level of difficulty[5,6]							
A little	4.2	5.2	3.7	2.8	1.3	5.6	6.5
Some	6.3	6.1	6.7	6.2	3.1	7.2	10.8
A lot	3.7	4.1	3.3	3.4	1.5	4.1	7.0
Unable to do	10.1	6.6	11.3	17.4	1.4	5.0	42.4
Preparing your own meals[4]	19.0	15.8	20.3	24.9	5.3	13.8	62.0
Level of difficulty[5,6]							
A little	3.0	3.0	3.5	1.7	0.7	3.6	6.3
Some	2.8	3.1	2.5	2.5	1.6	3.2	4.0
A lot	3.3	2.6	4.1	2.8	1.0	2.8	9.1
Unable to do	9.9	7.1	10.1	17.6	1.9	4.2	42.6
Managing your money, for example, paying bills or keeping a bank account[7]	14.8	10.0	15.4	27.0	7.5	11.8	38.2
Level of difficulty[5,6]							
A little	3.3	1.6	4.3	5.4	3.1	3.3	3.7
Some	3.0	2.2	2.8	5.9	0.8	3.0	7.8
A lot	1.5	1.4	1.1	2.4	0.3	1.2	4.6
Unable to do	7.0	4.7	7.1	13.2	3.3	4.3	22.2
Using the telephone[4]	10.1	6.8	11.0	17.2	6.1	9.5	20.1
Level of difficulty[5,6]							
A little	3.9	3.2	4.2	5.4	2.9	4.0	6.1
Some	2.6	1.5	3.4	3.6	1.6	2.0	6.2
A lot	1.5	1.0	1.6	2.6	0.7	1.7	2.8
Unable to do	1.9	1.0	1.8	4.8	0.7	1.8	4.8
Taking medications[8]	3.9	1.9	4.3	8.7	0.8	1.8	16.2
Level of difficulty[5,6]							
A little	1.2	0.5	1.6	2.0	0.1	0.6	5.0
Some	0.8	0.2	0.8	2.7	0.7	0.5	2.1
A lot	0.6	0.7	0.3	1.0	0.0	0.0	3.5
Unable to do	1.3	0.5	1.6	3.0	0.0	0.8	5.6

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The screener question is in the form "Because of a health or physical problem, do you have any difficulty . . . by yourself?" The presence of the condition was confirmed in the baseline interview.
[5] How much difficulty do you have?
[6] The percents of participants reporting their levels of difficulty may not add up to the percent reporting difficulty due to (1) rounding (2) level of difficulty not reported.
[7] The question is in the form "Do you have any difficulty . . . by yourself and without help from another person?"
[8] The question is in the form "Because of a health or physical problem, do you have any difficulty . . . by yourself?"

Table 2.5: Percent of Women Reporting Difficulty in ADLs and Level of Difficulty Reported[1,2]

Task and Level of Difficulty	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303	Moderate[3] (N=343)	ADL Difficulty	
						Receives No Help (N=478)	Receives Help (N=181)
Bathing or showering[4]	44.8	39.4	46.9	55.1	0.0	61.7	90.5
Level of difficulty[5,6]							
A little	9.5	10.8	8.3	9.0	0.0	15.4	12.7
Some	12.6	11.3	13.9	12.7	0.0	19.0	20.8
A lot	10.3	8.3	11.7	12.3	0.0	14.3	20.4
Unable to do	12.3	8.9	12.7	20.9	0.0	12.6	36.6
Getting in and out of bed or chairs[4]	35.1	33.3	35.4	39.5	0.0	51.4	62.3
Level of difficulty[5,6]							
A little	12.6	12.8	11.8	14.1	0.0	22.1	12.1
Some	11.4	9.2	12.8	14.0	0.0	16.4	21.0
A lot	8.1	8.7	7.9	7.3	0.0	11.4	16.0
Unable to do	2.6	2.2	2.7	3.8	0.0	0.8	13.2
Dressing[4]	21.4	19.1	23.0	23.7	0.0	23.7	59.2
Level of difficulty[5,6]							
A little	8.4	9.3	7.0	9.4	0.0	12.4	14.4
Some	7.0	5.4	8.2	8.1	0.0	7.8	19.1
A lot	3.8	3.1	5.1	2.1	0.0	3.5	12.3
Unable to do	2.3	1.4	2.7	3.7	0.0	0.0	13.3
Using the toilet, including getting to the toilet[4]	20.4	17.2	21.4	27.2	0.0	24.2	52.4
Level of difficulty[5,6]							
A little	5.1	4.8	5.2	5.4	0.0	8.1	7.1
Some	5.7	5.0	5.5	8.7	0.0	8.4	10.2
A lot	4.9	3.7	5.9	5.7	0.0	3.8	18.1
Unable to do	4.5	3.5	4.8	6.8	0.0	3.4	17.0
Eating, for example, holding a fork, cutting your food, or drinking from a glass[4]	9.1	8.4	10.0	8.6	0.0	11.0	22.6
Level of difficulty[5,6]							
A little	3.9	3.0	5.3	3.0	0.0	6.3	5.6
Some	2.7	2.3	2.8	3.6	0.0	2.6	8.7
A lot	1.6	2.2	1.0	1.8	0.0	1.6	5.0
Unable to do	0.7	0.7	0.9	0.2	0.0	0.3	3.4

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The screener question is in the form "By yourself, that is, without help from another person or special equipment, do you have any difficulty . . . ?" The presence of the condition was confirmed in the baseline interview.
[5] How much difficulty do you have?
[6] The percents of participants reporting their levels of difficulty may not add up to the percent reporting difficulty due to (1) rounding (2) level of difficulty not reported.

3

Adaptation to Disability

Jeff D. Williamson, Linda P. Fried

In studies of older adults, physical function and disability are usually assessed in terms of self-reported difficulty or inability to perform specific tasks of daily life across a range of functions, e.g., activities of daily living (ADLs) such as bathing, dressing, eating, and toileting (Katz et al., 1963) or instrumental activities of daily living (IADLs) such as shopping, telephone use, meal preparation, and money management (Lawton and Brody, 1969), and mobility, upper extremity function, and exercise tolerance-demanding tasks (Nagi, 1976; Rosow and Breslau, 1966). An individual's assessment of the difficulty doing a task may be affected both by self-perception and by adaptations made to compensate for, or minimize, a decline in function. For example, an individual who has installed rails and a chair in the bath because of concerns about unsteadiness may, when questioned, report no difficulty when bathing. Therefore, in studies aimed at assessing disability in the elderly, information on adaptation to disability can provide important insights into a broader spectrum of functioning than asking about difficulty alone (Fried et al., 1991).

This chapter presents data from the Women's Health and Aging Study (WHAS) describing a spectrum of functioning among moderately to severely disabled women and the adaptations they make, including changes in the manner in and frequency with which they perform certain tasks, functional limitations related to structural aspects of the housing environment, and use of walking aids. These data provide insight into the daily lives of these women and the approaches used to compensate for disability.

Perception of Difficulty and Adaptation to Difficulty

For selected tasks, Table 3.1 presents the proportion of women who reported that they had no difficulty, difficulty, that they were unable to do the task, or that they did not do the task. For those who did these tasks (either with or without difficulty), the proportion doing the task less often and/or differently is provided. For a subset of these tasks, the proportion receiving help is also shown. The questions on adaptation were developed in the Johns Hopkins Functional Status Laboratory (Fried et al., 1991) and adapted for the WHAS.

Table 3.1 shows that substantial percentages of women who reported having no difficulty with a task reported changes in task performance. For example, although 48 percent of participants indicated no difficulty in walking up 10 steps without resting, 37 percent of these women performed this task less often than before. Similarly, 51 percent of participants who indicated that they had no difficulty walking one-quarter of a mile, walked this distance less often. In contrast, 92 percent of women who reported difficulty walking this distance walked it less often. Participants were also asked whether they performed selected tasks differently. Fifty percent of the women reporting no difficulty with heavy

housework and 46 percent of those reporting no difficulty walking up 10 steps without resting reported doing these tasks differently than they used to. Changes in method were reported at even higher rates by women reporting difficulty with these same tasks, 68 percent and 86 percent, respectively. Other tasks in which women reported no difficulty but had changed the frequency and/or method of doing the tasks include walking across a small room, carrying 10 pounds, shopping, preparing meals, and managing money.

The data in Table 3.1 clearly show that when women had difficulty with a task, a high proportion of them reported changes in the method and/or frequency of task performance; a smaller but nonetheless substantial proportion of women who did not perceive difficulty also reported change in the method and/or frequency of task performance. Such adaptation is likely a response to functional decrements made in an effort to preserve task performance. Identifying these adaptations may be useful in understanding how individuals minimize disability and maintain independence. It is notable that tasks for which women were most likely to make adaptations were those for which this population had the highest prevalence of task difficulty or inability to perform. For example, the greatest amount of modification was reported for tasks associated with the highest mobility and exercise-tolerance requirements and the highest rates of reported difficulty and inability. These tasks included heavy housework and climbing stairs.

The importance of these modifications in task performance remains to be determined. However, these results suggest additional dimensions for describing function beyond the existing conceptual frameworks used to identify the presence of disability (Institute of Medicine, 1991; Nagi, 1976; World Health Organization, 1980). These data also suggest that the prevalence of functional decrements may be greater than that ascertained by assessing only difficulty or inability to perform activities.

Relationship of Housing Characteristics to Needs and Abilities

Table 3.2 describes housing characteristics and the need for change in the living environment as well as reductions in the use of living space because of health problems. Eighty percent of these disabled women resided in homes where at least one step up or down was necessary to enter their home. With increasing age, a smaller proportion of women resided in homes with an entry step(s). Among all women whose homes had an entry step(s), almost 11 percent reported they were unable to walk up 10 steps without the assistance of another person or special equipment. The proportion unable to climb 10 steps increased with increasing age and disability level. For women who had entry steps, 19 percent of those age 85 years and older and 34 percent of those receiving help with ADLs reported being unable to climb 10 steps without assistance.

Of the 56 percent of women in this population who lived in homes that did not have a bathroom, bedroom, and kitchen located on the same floor, nearly one-third reported needing them on the same floor. With increasing age and disability level, the proportion of women needing their bathroom, bedroom, and kitchen on the same level increased. Among those age 85 years and older who did not have a residence with a bathroom, bedroom, and kitchen on the same floor, 42 percent needed this arrangement, in contrast to 28 percent of women age 65 to 74 years. In women with ADL difficulty who received help, 57 percent did not have their bathroom, bedroom, and kitchen on the same floor, and 58 percent of these women, compared with 17 percent of the moderately disabled, needed them on the same floor.

Few women had a walk-in shower. The proportion that needed a walk-in shower was about 20 percent and did not vary with age, but was

strongly related to severity of disability. Among women with ADL difficulty who received help, 45 percent who did not have a walk-in shower stated that they needed one because of a health or physical problem.

Overall, 12 percent of participants had stopped using one or more rooms in their homes because of a health or physical condition. The rates were highest in the oldest women and the most disabled. Fifteen percent of women age 85 years and older and 35 percent of women receiving help with ADLs reported that they had stopped using one or more rooms in their home. On average, women who reported reduction in use of living space due to their health no longer used 30 to 40 percent of the rooms in their homes.

Use of Walking Aids

Table 3.3 presents data on the use of walking aids in various environments. When walking, 37 percent of the population used a cane, 32 percent held onto another person, and 11 percent used a walker. Overall, 3 percent of participants could not walk and 11 percent sometimes used a wheelchair. The proportion of participants using each walking aide increased with both age and level of disability, independent of the environment. In addition, 41 percent of this population reported that they reached out for, or held onto, furniture or walls to assist them in walking. This is another example of a compensatory strategy. Another adaptation, reported by 50 percent of these disabled women, is the use of shopping carts for support while shopping. These data indicate that such adaptations, or compensatory strategies, are frequently used to facilitate ongoing performance of tasks such as walking in the home or shopping for personal items. They also suggest that the proportion of this disabled population that reported use of assistive devices may not include the full spectrum of individuals who need them or may have difficulty with postural stability.

The environment in which walking occurred influenced participants' choices of assistive devices or other strategies to compensate for their disabilities. Overall, canes, wheelchairs, and the assistance of another person were used less often when the respondents walked inside the home than outside. For example, 19 percent used a cane when ambulating inside while 34 percent used one when walking outside the house. Similarly, 5 and 9 percent, respectively, used a wheelchair, and 6 and 29 percent, respectively, used the assistance of another person when walking inside, compared with outside, the home. This difference likely results from the lesser demands of walking inside in a familiar environment.

Summary

Characterizing adaptations to disability expands our insight into the spectrum of functioning among disabled older women beyond what can be learned through the usual assessment of difficulty and need for help. Further delineation of the types of adaptation used by older people and the predictive importance of such compensations will define whether this dimension can lead to better understanding of risk for further functional decline and of opportunities for prevention of disability.

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Table 3.1: Perception of Disability and Adaptation to Disability (N=1002)[1,2,3]

Task and Adaptation	No Difficulty (%)	Difficulty (%)	Unable to Do (%)	Doesn't Do (%)
Walking up 10 steps without resting[4]	48.2	38.6	13.2	-
Does less often[5]	37.4	84.6	-	-
Does differently[6]	46.1	85.5	-	-
Walking for a quarter of a mile, that is about 2 or 3 blocks[4]	25.6	48.1	26.3	-
Does less often[5]	51.3	92.0	-	-
Doing heavy housework such as washing windows, walls or floors[7]	11.9	26.8	54.8	6.5
Does less often[5]	68.9	89.7	-	-
Does differently[6]	49.9	67.9	-	-
Receives help[8]	41.6	58.3	83.4	75.0
Walking across a small room[9]	74.5	19.7	5.8	-
Does less often[5]	16.4	72.4	-	-
Lifting or carrying something as heavy as 10 pounds, for example a bag of groceries[4]	34.3	45.6	20.1	-
Does less often[5]	55.9	90.6	-	-
Shopping for personal items, such as toilet items or medicine[7]	55.6	14.1	26.8	3.5
Does less often[5]	29.9	74.8	-	-
Does differently[6]	22.4	80.4	-	-
Receives help[8]	26.8	71.5	95.9	83.3
Doing light housework such as doing dishes, straightening up or light cleaning[7]	73.6	14.2	10.1	2.1
Receives help[8]	20.7	55.1	93.1	71.5
Preparing your own meals[7]	78.4	9.1	9.9	2.6
Does less often[10,11]	15.0	74.2	-	-
Does differently[10,12]	15.6	63.3	-	-
Missing	10.7	0.0	-	-
Do you have any difficulty managing your money, for example, paying bills or keeping a bank account, by yourself and without help from another person?	78.9	7.8	7.0	6.4
Does less often[13]	5.0	69.5	100.0	-
Receives help[14]	14.0	72.0	61.2	39.8
Using telephone[7]	89.4	8.2	1.9	0.5
Receives help[8]	2.2	28.7	56.9	-
Taking medications[15]	95.4	2.6	1.3	0.7
Receives help[8]	3.7	84.8	97.8	14.7

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables except preparing meals less often or differently have less than 2% missing data. For these variables, results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] First row for each task may not add up to 100% due to rounding.
[4] The screener question is in the form "By yourself, that is without help from another person or special equipment, do you have any difficulty . . . ?" Item is followed by "How much difficulty do you have?" The presence of the condition was confirmed in the baseline interview.
[5] The question is in the form "Do you [do the task] less often than you used to?"
[6] The question is in the form "Do you [do the task] differently than you used to?"
[7] The screener question is in the form "Because of a health or physical problem, do you have any difficulty . . . (by yourself)?" and followed by "By yourself, how much difficulty do you have?" The presence of the condition was confirmed in the baseline interview.
[8] Do you usually receive help from another person [doing the task]?

(Continued)

(Continued)

[9] The question is in the form "By yourself, that is without help from another person or special equipment, do you have any difficulty . . . ?" Item is followed by "How much difficulty do you have?"
[10] Due to an error in the administration of the questionnaire the questions were not asked of all eligible participants.
[11] Have you cut back on the number of meals you prepare because your health makes it difficult?
[12] Have you changed the types of food you prepare or given up preparing certain foods because your health makes it difficult?
[13] Are you less involved in managing your money than you used to be because your health or physical condition makes it difficult?
[14] Does another person usually help you with managing your money?
[15] The question is in the form "Because of a health or physical problem, do you have any difficulty . . . (by yourself)?" and followed by "By yourself, how much difficulty do you have?"

Table 3.2: Relationship of Housing Characteristics to Needs and Abilities[1,2]

Housing Characteristics and Needs %	Total (N=1002)	Age Level			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Is it necessary to go up or down a step to get into this (house/apartment) from the outside?							
Yes	80.3	84.8	79.8	68.2	79.9	80.1	81.4
If yes: Unable to go up 10 steps[4]	10.6	6.6	12.8	18.6	1.5	8.8	34.3
Does this (house/apartment) have a bathroom, bedroom, and kitchen all on the same floor or level ?							
No	55.9	60.8	55.3	43.5	60.6	52.0	57.0
If no: Because of a health or physical problem, do you need a bathroom, bedroom, and kitchen all on the same floor or level?	31.9	28.1	33.6	41.9	17.4	34.0	58.2
Does this (house/apartment) have a walk-in shower, that is, where you don't step over the side of the tub to get into the shower?							
No	84.7	84.1	85.9	83.2	85.4	84.6	83.7
If no: Because of a health or physical problem, do you need a walk-in shower?	22.2	22.8	20.4	25.4	14.5	20.0	45.0
Are there any rooms that you have stopped using because of your health or physical condition?							
Yes	12.1	11.9	11.5	14.6	3.4	10.5	34.7
If yes: Mean percent of rooms[5]	40.0	32.6	42.8	47.9	29.7	36.2	43.8

(Women's Health and Aging Study, baseline interview, 1992-1994)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Percents and means are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] By yourself, that is without help from another person or special equipment, do you have any difficulty walking up 10 steps without resting? How much difficulty do you have?
[5] 100(r/R), where r=number of rooms no longer using (How many?) and R=number of rooms (How many rooms do you have in your (house/apartment)?)

Table 3.3: Walking Aids (Percent)[1,2]

Walking Aids	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty	
						Receives No Help (N=478)	Receives Help (N=181)
When you walk, do you . . . ?							
Use a cane	37.0	27.9	39.9	56.0	22.3	44.5	46.6
Use a walker	11.2	7.1	10.6	24.6	2.5	11.3	28.9
Reach out for or hold onto furniture or walls	41.0	36.7	40.3	55.6	24.9	46.7	58.6
Hold onto another person	32.3	27.6	31.4	48.2	19.4	33.8	54.7
Cannot walk	3.1	3.1	3.1	2.8	0.0	1.3	14.3
Do you use a wheelchair?	11.1	9.6	11.2	15.2	1.8	8.1	38.4
Do you . . . at home?							
Use a cane	19.3	12.2	21.2	34.8	9.0	22.2	32.0
Use a walker	9.2	5.8	8.4	21.7	1.7	8.7	26.5
Use a wheelchair	5.4	6.1	4.7	5.2	0.4	2.4	24.1
Reach out for or hold onto furniture or walls (when you walk)	38.4	33.8	38.3	52.1	24.1	43.7	53.4
Hold onto another person (when you walk)	6.2	4.8	6.4	9.9	2.5	3.6	21.4
Do you . . . outside your home?							
Use a cane	34.3	26.3	36.7	51.4	20.8	42.6	39.4
Use a walker	6.7	5.8	5.6	12.5	1.5	7.3	15.9
Use a wheelchair	9.0	8.3	8.2	13.4	1.4	7.0	30.6
Reach out for or hold onto furniture or walls (when you walk)	21.0	17.8	21.8	27.9	12.2	25.2	27.5
Hold onto another person (when you walk)	28.5	24.3	28.8	40.3	17.8	30.3	45.6
When you walk in the dark, do you (reach out for or) hold onto . . . ?							
The furniture or walls	40.3	38.0	42.0	42.4	38.4	41.6	40.5
Another person	7.0	5.6	8.4	7.3	6.6	5.1	13.4
Doesn't walk in dark	11.2	10.6	8.7	20.0	7.1	14.5	10.7
Cannot or does not walk across small room	7.0	5.6	7.6	9.4	0.1	4.9	27.5
When you shop, do you lean on an object such as a shopping cart?							
Yes	50.3	52.3	51.1	42.2	49.5	57.3	32.3
Doesn't shop or walk	20.5	14.6	18.4	43.3	8.6	15.6	58.5

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

4

Physical Performance Measures

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In performance-based tests, which objectively assess various aspects of physical functioning, an individual typically performs a task in a standardized manner and performance is measured with predetermined, objective criteria, often including time to completion or counting of repetitions. In recent years, these measures have been increasingly employed in studies of functional status and disability in old age. In older persons, performance measures provide information that complements what can be learned from a clinician's physical examination (Tinetti and Ginter, 1988) and from traditional, questionnaire-based approaches that assess disability through proxy or self-report (Guralnik et al., 1989, 1994; Reuben et al., 1992, 1995).

The Women's Health and Aging Study (WHAS) included physical performance measures because they offer objective and detailed information about functional capacity and therefore provide valuable information for understanding the causal pathway from diseases to disability. The specific performance tests selected assess a spectrum of functioning, from basic abilities such as balance to complex activities such as putting on a blouse. These measures also quantify physical function along a continuous scale, ranging from very poor to excellent. They are therefore expected to be particularly valuable in detecting change in function over time.

A variety of performance tests have been developed for use in institutions (Gerety et al. 1993; Winograd et al., 1994) and among community-dwelling older persons (Guralnik et al., 1994; Harding et al., 1994; Reuben and Siu, 1990; Tinetti, 1986; Tinetti and Ginter, 1988; Weiner et al., 1992; Williams and Hornberger, 1984; Williams et al., 1990). In general, these tests may be categorized by either the domain of functioning they assess (e.g., upper extremity versus lower extremity) or the complexity of the functioning they assess (more basic physiologic abilities, such as grip strength, versus more complex tasks, such as putting on a blouse).

The first part of this chapter groups the results of performance-based tests assessing basic physical abilities according to lower extremity and upper extremity function. Performance of more complex tasks that mimic activities in daily life are reported later in the chapter. The performance tests were administered in the participant's home by a nurse, with the exception of functional reach, dialing the telephone, putting on a blouse, and opening a lock with a key, which were administered by an interviewer.

The tables also provide information on subjects with missing values and, in particular, the percentage who could not complete the tests because of physical limitations. Identifying inability to perform a test provides meaningful information about individual functioning. In addition, completion rates for these tests may be important to other investigators as they estimate the proportion of the disabled population that can be evaluated using each specific instrument.

Lower Extremity Function

Good lower extremity function is necessary for mobility and is thus a critical element for independence in the community. Measures of gait, balance, and ability to rise from a chair have been found to predict mortality and nursing home admission in representative samples of older adults (Guralnik et al., 1994) and incident disability in nondisabled persons over age 70 years (Guralnik et al., 1995). Measurements of hip flexor and knee extensor muscle strength are presented in Chapter 12 (see Table 12.7).

Measured Walk

The ability to walk is essential for many tasks of daily life. It requires the coordinated function of a number of subsystems, including muscular strength, joint mobility, coordination, proprioception, reflex control, and balance.

In the WHAS, the participant was asked to walk over a 4-meter course. For a small group of women, adequate space was not available in the home and a 3-meter course was used. Participants were instructed to stand with both feet at the starting line and to start walking after a specific verbal command. Timing began when the command was given. In this test, the subject could use a cane, a walker, or other walking aid, but not the aid of another person. The times to complete the first meter and the entire path were recorded. The test was repeated three times, twice at the woman's usual pace and once at her fastest possible pace. The speed of the faster of the two usual-pace walks is presented. The length of the walk expressed in meters divided by the time in seconds was used to calculate average walking speed.

Table 4.1 shows the results for the measured walks. The percent of participants unable to do the usual-pace walk increased with increasing severity of disability but not with age. This lack of an age association was unexpected. One possible explanation is that a high proportion of the oldest disabled women who cannot walk a short distance reside in long-term care facilities and were therefore excluded from this study of community-dwelling women. The percent unable to do the fast-pace walk was higher than for the usual-pace walk and increased with increasing age and disability.

Walking speed was inversely related to age and level of disability in both the usual-pace and fast-pace tests. It has been demonstrated that usual walking speed of less than 0.6 meters/second is associated with increased risk of falls (Nevitt et al., 1989). In the WHAS population, the percent of subjects under this threshold ranged from 50 percent to over 75 percent, depending on age and level of disability (Table 4.1).

The difference between mean gait speed in the fast-pace versus the usual-pace walk becomes smaller with increasing level of disability, specifically 0.4, 0.3, and 0.2 in the moderate, ADL difficulty receives no help, and ADL difficulty and receives help groups, respectively (Table 4.1). This result should be interpreted with caution, however, since the results for the fast-pace walk include a somewhat smaller subset of subjects (women who were slower in the normal-pace walk were more likely not to perform the fast-pace walk).

Tests of Balance

A series of performance tests in the WHAS explore the integrity of physiological systems involved in the maintenance of static and dynamic balance.

Static balance is evaluated in three different, progressively more difficult stances (Buchner et al., 1993; Guralnik et al., 1994): (1) side-by-side: feet side by side, touching; (2) semi-tandem: side of the heel of one foot touching the big toe of the other; (3) tandem: heel of one foot directly in front of and touching the toes of the other foot. Each stance is progressively more difficult to hold. Women unable to hold a position for 10 seconds were not asked to attempt further stands.

The results of the balance tests are reported in Table 4.2. The proportion of women able to hold each stand decreased substantially with increasing age and level of disability. Almost 40 percent of women age 65 to 74 years maintained the tandem stand for the full 10 seconds in contrast to only 4 percent of the oldest women. Similarly, 35 percent of the moderately disabled women held the tandem stand for 10 seconds compared to 8 percent of the most disabled women. Progressively higher proportions of women were able to hold the semi-tandem and side-by-side stands, compared with the full tandem.

The functional reach test is a dynamic measure of the perceived limit of stability during a voluntary movement (Duncan et al., 1990; Weiner et al., 1992). For this test, the participant was instructed to stand with her right shoulder next to a wall, make a fist, fully extend her arm horizontally at the level of the shoulder, and then reach forward as far as possible without losing balance or changing the position of her feet. Functional reach is defined as the difference (in centimeters) between the initial and final position of the fist. The results shown in Table 4.3 are the best of three trials.

A relatively large percentage of the population did not perform the functional reach test. Participants were considered unable to do the test if they could not stand unassisted for 30 seconds, if there were concerns about safety, or if they attempted but could not complete the test. Excluded from Table 4.3 are the 10 percent of women whose homes had insufficient wall space to perform the test. As lack of sufficient wall space is unlikely to be associated with ability to perform the test, the data reported here should be considered representative of the entire WHAS sample.

The proportion unable to perform the test rose steeply with increasing age and level of disability. Among those who performed the test, the mean distance reached was shorter in women age 75 years and older compared with younger women, and shorter in those receiving help with ADLs compared with the remainder of the cohort. There was a wide spectrum of performance in the total population, ranging from 7.5 centimeters for those in the 5th percentile to 34.0 centimeters for those in the 95th percentile. Interestingly, this range was quite similar for all age and disability subgroups.

Chair Stands

To test the ability to rise from a chair, participants were asked to sit with their arms folded across their chests in a straight-backed chair placed with its back against a wall, and then to stand up from the chair one time. If they were successful, they were asked to stand up and sit down as quickly as possible five times in a row. Timing commenced from the initial sitting position and ended at the final standing position at the end of the fifth stand.

The chair stand is a complex test in which several physiologic components, including muscular strength, balance, coordination, joint range of motion, and exercise tolerance, contribute to the overall performance. From the functional point of view, the task may be described as the ability to transfer the body from one posture to another, with the second posture requiring a higher level of energy and more effective functioning of the systems involved in maintaining balance.

Table 4.4 shows that the simple capacity to stand from a chair without using the arms is strongly associated with both age and level of disability. Table 4.5 shows the results for the repeated chair stands. It is interesting to note that the proportion of women who were unable to perform five chair stands was just slightly higher than the proportion who were unable to perform the single chair stand, as shown in Table 4.4. Among women who completed five stands, the mean time to completion increased with increasing age and severity of disability. There was, nonetheless, a wide range of performance in each age and disability subgroup. Evidence indicates that poor performance in chair stand tests is associated with adverse health outcomes in older

persons (Cummings et al., 1995; Guralnik et al., 1994, 1995; Tinetti et al., 1995).

Upper Extremity Function

Performance on tests of upper extremity function is an important marker of functional dependency (Williams et al., 1990). Older individuals who perform poorly on tests of manual dexterity tend to use more health care resources (Scholer et al., 1990; Williams et al., 1982), including intermediate and long-term care (Williams and Hornberger, 1984; Williams, 1987).

In the WHAS, the following components of upper extremity function were assessed: grip and pinch strength, overhead lifting ability, shoulder range of motion, manual dexterity, and performance of selected tasks of daily living.

Strength

Tables 4.6 and 4.7 report data on grip and pinch strength, which were obtained using a JAMAR hand dynamometer (Model #BK-7498, Fred Sammons, Inc., Burr Ridge, IL) and a standard 0-60 pound pinch gauge (Model #81441, Adaptability, Colchester, CT), respectively. Grip strength was performed three times with each hand. The best measure in the stronger hand is reported. For pinch strength, the best of two trials (one on the left side and one on the right side) is reported. For both strength measures, the percent of subjects who did not perform the tests increased with level of disability, while there was no clear association with age. Among those who were able to perform the tests, grip and pinch strength decreased with increasing age and level of disability.

To evaluate overhead lifting ability, another aspect of upper extremity strength, a water-filled plastic jug weighing 10 pounds was placed on the lap of the participant, who was then asked to lift the jug above her head using both arms. Nearly half the participants could lift the 10-pound jug over their heads and less than 8 percent could not lift it at all (Table 4.8). The percentage of women who could not lift the jug at least to eye level increased with increasing age and level of disability. The proportion of women who could lift the 10 pounds above their heads declined with increasing age and severity of disability, although the decline was more pronounced with increasing level of disability.

Shoulder Range of Motion

Shoulder range of motion was tested using standardized voluntary movements. External rotation was assessed by having the participant put both hands behind her neck at the level of the ears. To evaluate internal rotation, the participant placed both hands behind her back at waist level with the fingers touching in the midline. These measures provide different information than traditional assessments in which the examiner manipulates the limbs to examine passive range of motion. Voluntary movements are influenced by the presence of pain and muscular weakness, as well as by the morphologic characteristics of the joints.

For external and internal rotation, performance was classified as "fully able" (test performed correctly), "partially able" (test performed partially; for example, forearm not parallel to the floor or hands not behind the neck for external rotation), or "unable" (no component of the movement could be performed), according to preestablished criteria.

The data on external shoulder rotation show reduced range of motion with increasing age and level of disability. The reduction in range of motion is particularly notable in association with disability level, declining from about 80 percent fully able among the moderately disabled to only half fully able among women who received help with ADLs. In contrast, problems with internal rotation were relatively rare, affecting less than 5 percent overall, with little association with age and an increase with increasing level of disability.

Purdue Pegboard

The Purdue Pegboard is a test of manual dexterity that involves two different abilities: gross movements of arms, hands, and fingers, and fine motor dexterity, also called "fingerprint" dexterity. The test consists of picking up small steel pegs from a well in the pegboard and placing them sequentially in 10 holes as quickly as possible.

Results are shown in Table 4.10 for the dominant and nondominant hands. There is a clear relationship of performance with age and disability level. With increasing age and severity of disability, the proportion who were unable to complete the test increased and, among those who completed the test, there was a decline in both the mean and median times. The strong association between manual dexterity and disability is noteworthy, as many ADLs do not depend on fine motor movements of the hand. Performance on the Purdue Pegboard test probably also reflects the central neurologic processing components of movement, such as coordination.

Daily Living Tasks

The performance-based assessment of upper extremity function ended with three timed tests that mimic common tasks performed in daily life —opening a lock with a key, putting on and buttoning a blouse, and finding a telephone number and dialing it. The capabilities explored by these performance tests differ from the functional abilities described above. These tests focus on the ability to reproduce complex, real-life tasks rather than on specific physiologic abilities. Thus, these measures are closer to the concept of disability than are the tests of more basic abilities.

For the task of opening a lock with a key, the participant was instructed to pick up a key from the table and open a lock mounted in a wooden block as quickly as possible. Time was recorded from the first movement of the participant's hand toward the key until the lock was opened. A maximum time of 1 minute was allowed. For the task of putting on and buttoning a blouse the participant was given a blouse of appropriate size and instructed to put it on and button it as fast as possible without mistakes (Cardiovascular Health Study, 1990). This task was performed in the standing position or, for women unable to stand unsupported, in the sitting position. Timing began when the participant touched the blouse and ended when the task was completed or after 4 minutes, whichever came first.

In general, the functional abilities of almost all participants could be evaluated with these tests, although many were unable to perform certain aspects of the tasks. All but 6 percent were able to open the lock and all but 5 percent were able to put on the blouse (Tables 4.11 and 4.12). However, 19 percent of the women were unable to button the blouse. Poor performance in opening a lock and putting on a blouse was associated with level of disability, and the buttoning component of putting on the blouse was especially problematic for women who received help with ADLs. A major component of these tasks is manual dexterity. The association of performance on these tasks with level of disability is consistent with the results previously presented for tests investigating more basic physical abilities of the upper extremities, i.e., pinch and grip strength and Purdue Pegboard performance.

In the telephone use task, the participant was instructed to look up a specific telephone number on a mock telephone book page and to dial it on a standard Touch-Tone telephone. If the participant could not find the number, the examiner told her where on the page to look for it. If still unsuccessful, she was given the number on a piece of paper. Timing began when the participant started looking for the telephone number and was stopped when she had dialed the entire number. Table 4.13 shows results separately for finding and for dialing the number, and gives the distribution of time to complete the entire task for those who found and dialed the correct number.

The ability to find and dial a telephone number is more dependent on cognition, vision, and

ability to read than on motor ability. Women with severe cognitive impairment were excluded from this study population, so the role of cognition in task performance is probably less important than for the total older population. The ability to find the telephone number decreased markedly with increasing age and disability level. The need for prompting increased somewhat with age but not with disability level. The strong age and disability gradient was more related to visual problems and was noted through the need for a magnifier and inability to read print. Among those who found the correct telephone number or were given the number, 90 percent dialed the correct number. The percentage successful in this task declined with age and level of disability. However, the age gradient was associated with the increased percentage of the older subjects dialing the incorrect number, while the disability gradient was more related to actual inability to dial the number in those with the greatest disability. The total time required to perform the task, shown only for those who completed the entire sequence by themselves, was associated with both age and disability, although there was a large range of variability within each subgroup.

Summary

The physical performance tests described in this chapter provide comprehensive information on many aspects of the functional capabilities of moderately to severely disabled older women in the WHAS. The study provides valuable information on the proportion of women who can complete each task and the level of performance of those who do complete the task. Even in this cohort of women, selected for having disability, most women could complete most of the tasks. There was, however, a wide range of performance in each of the age and disability subgroups. Ultimately, improving our understanding of the factors that cause an older person's functional limitations and the impact these limitations have on an older person's ability to remain independent in the community is an important challenge for aging research.

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Table 4.1: Measured Walks[1,2]

Walking Test	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Faster of 2 usual-pace measured walks[4]							
Unable to do (%)	3.8	3.9	4.2	2.3	0.0	1.6	18.0
Speed (meters/second)							
Mean	0.6	0.7	0.6	0.4	0.7	0.6	0.4
5th percentile	0.2	0.3	0.2	0.1	0.3	0.2	0.1
25th percentile	0.4	0.5	0.4	0.3	0.5	0.4	0.2
50th percentile	0.6	0.6	0.6	0.4	0.6	0.5	0.4
75th percentile	0.7	0.7	0.8	0.6	0.8	0.7	0.5
95th percentile	1.1	1.1	1.1	0.8	1.1	1.1	0.8
Fast-pace walk[4]							
Unable to do (%)	6.0	4.9	6.2	9.2	0.3	3.5	26.0
Speed (meters/second)							
Mean	0.9	1.0	0.9	0.7	1.1	0.9	0.6
5th percentile	0.2	0.4	0.3	0.2	0.5	0.3	0.2
25th percentile	0.6	0.8	0.6	0.4	0.8	0.6	0.3
50th percentile	0.9	1.0	0.9	0.7	1.0	0.9	0.6
75th percentile	1.1	1.3	1.1	0.9	1.3	1.1	0.8
95th percentile	1.7	1.7	1.7	1.3	1.7	1.6	1.2

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] If 4 meters not available, the walk was 3 meters.

Table 4.2: Percent Able to Hold Stands for Ten Seconds[1,2]

Type of Stand	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Side-by-side stand	84.1	90.0	84.6	65.5	95.1	85.3	58.2
Semi-tandem stand	63.2	76.1	61.0	31.6	78.0	62.6	34.5
Tandem stand	24.9	39.7	16.6	4.0	34.8	23.6	8.2

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.3: Functional Reach[1,2]

Test Performance	Total (N=899)	Age Group			Disability Level		
		65-74 (N=347)	75-84 (N=279)	85+ (N=273)	Moderate[3] (N=295)	ADL Difficulty: Receives No Help (N=432)	ADL Difficulty: Receives Help (N=172)
Unable to do (%)	26.3	19.1	27.2	44.7	11.5	22.6	63.7
Distance reached (cm)[4]							
Mean	20.9	22.8	19.1	19.3	21.5	21.1	17.1
5th percentile	7.5	8.6	6.9	8.5	7.5	8.5	4.7
25th percentile	15.2	18.4	13.5	14.5	17.4	15.0	10.5
50th percentile	21.5	24.0	18.8	19.0	22.0	21.3	16.4
75th percentile	26.3	28.2	24.0	24.0	27.0	26.4	24.2
95th percentile	34.0	34.8	32.8	33.0	34.0	34.0	31.8

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Data on functional reach missing for 103 (10%) women; most missing data due to lack of wall space. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Longest of up to three reaches.

Table 4.4: Single Chair Stand[1,2]

Ability to Stand from Chair	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Stood without using arms (%)	78.7	85.4	78.3	59.8	94.1	80.5	42.1
Unable to stand without using arms (%)	21.3	14.6	21.7	40.2	5.9	19.5	57.9

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Variable has less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.5: Repeated Chair Stands[1,2]

Test Performance	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Unable to do (%)	25.2	17.8	25.9	44.9	7.5	24.4	63.7
Time to rise five times (seconds)							
Mean	15.3	14.7	15.7	16.3	14.2	15.8	17.9
5th percentile	24.5	21.9	25.5	24.1	20.7	25.3	28.6
25th percentile	17.4	16.7	17.5	18.5	15.9	18.1	20.1
50th percentile	14.2	13.9	14.4	15.0	13.5	14.8	16.8
75th percentile	12.3	12.1	12.4	12.7	11.7	12.9	13.5
95th percentile	10.0	9.6	10.3	10.0	9.3	10.1	11.2

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Variable has less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.6: Grip Strength[1]

Test Performance	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[2] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Unable to do (%)[3]	2.6	2.3	3.3	2.0	0.6	3.4	4.9
Missing (%)[4]	5.0	4.5	4.5	7.8	5.4	5.1	3.6
Grip strength (kg)[5]							
Mean	20.8	22.6	20.1	17.5	21.8	21.2	17.9
5th percentile	12	13	11	11	13	12	8
25th percentile	17	20	17	15	18	17	14
50th percentile	20	23	20	18	21	20	18
75th percentile	24	26	24	20	24	24	20.5
95th percentile	30	31	30	25	30	30	27

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[3] Includes women with recent worsening of pain or of arthritis in the wrist, tendonitis, recent surgery on hands or arms or for whom test was thought to be unsafe.
[4] Includes 53 (5%) women not given the task because of a blood pressure alert.
[5] The best measure of three attempts for stronger arm.

Table 4.7: Pinch Strength[1]

Test Performance	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[2] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Unable to do (%)	0.5	0.5	0.3	0.7	0.1	0.6	0.6
Pinch strength (kg)[3]							
Mean	5.0	5.3	4.7	4.3	5.2	4.9	4.4
5th percentile	3	3	3	3	3	3	2
25th percentile	4	4	4	4	4	4	3
50th percentile	5	5	5	4	5	5	4
75th percentile	6	6	5	5	6	6	5
95th percentile	7	8	7	6	8	7	7

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[3] The best measure of two attempts, one left and one right.

Table 4.8: Upper Extremity Strength[1,2,3]

Height of Lift	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[4] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Lifting 10-pound jug (%)							
Lifted over head	48.6	59.9	44.1	28.0	61.9	50.0	16.6
Lifted to eye level	26.4	23.0	29.1	29.1	24.8	27.0	27.8
Unable to lift to eye level	17.3	10.4	18.1	35.0	8.9	18.3	32.1
Unable to lift over 1 inch	7.7	6.7	8.8	7.9	4.4	4.7	23.5

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Variable has less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Columns may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.9: Shoulder Rotation[1,2]

Range of Motion[3]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[4] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Right shoulder, external rotation (%)							
Fully able	71.7	76.2	70.4	61.9	80.0	73.0	50.6
Partially able	25.6	21.4	27.1	33.5	19.8	25.0	39.2
Unable	2.8	2.4	2.6	4.6	0.2	2.0	10.3
Left shoulder, external rotation (%)							
Fully able	71.2	75.7	70.6	59.8	78.8	73.3	49.5
Partially able	25.1	20.9	25.2	37.5	20.2	25.3	35.1
Unable	3.7	3.5	4.2	2.7	1.0	1.4	15.4
Right shoulder, internal rotation (%)							
Fully able	96.1	95.7	96.2	97.0	98.4	97.4	87.6
Partially able	2.3	2.6	2.4	0.9	0.3	2.0	6.9
Unable	1.7	1.7	1.5	2.2	1.2	0.6	5.5
Left shoulder, internal rotation (%)							
Fully able	96.1	96.1	95.8	96.9	98.8	97.2	87.6
Partially able	1.7	1.4	2.4	0.8	0.0	2.4	3.3
Unable	2.2	2.5	1.8	2.4	1.2	0.4	9.1

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.10: Purdue Pegboard[1,2]

Test Performance	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Trial with dominant hand							
Unable to do (%)	6.8	4.4	6.8	13.6	5.0	4.7	16.5
Time (seconds)							
Mean	30.2	28.5	30.7	34.2	28.7	29.7	35.6
5th percentile	47.6	41.7	46.4	52.7	42.6	47.2	55.0
25th percentile	34.5	31.2	35.0	38.4	32.8	33.3	41.6
50th percentile	28.7	26.8	29.1	32.3	27.6	28.1	34.4
75th percentile	25.0	23.9	25.3	27.0	24.4	24.8	28.4
95th percentile	21.2	20.7	21.4	22.8	21.0	21.0	22.9
Trial with other hand							
Unable to do (%)	9.3	6.4	9.2	17.8	4.5	6.6	26.8
Time (seconds)							
Mean	31.3	29.3	32.0	35.5	30.3	30.7	36.3
5th percentile	49.6	44.0	47.6	54.5	44.5	47.7	56.0
25th percentile	35.7	32.4	35.9	39.1	34.8	34.4	43.6
50th percentile	30.0	27.5	30.6	32.6	28.8	29.5	35.1
75th percentile	25.6	24.1	26.2	28.1	25.0	25.6	29.4
95th percentile	21.6	21.0	22.3	22.9	21.2	21.2	23.9

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.11: Opening a Lock with Key[1,2]

Test Performance	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Able to pick up key (%)	96.8	97.2	97.1	95.1	98.4	97.4	92.0
Able to put key in lock (%)	94.7	96.3	95.3	88.6	97.5	95.9	85.5
Able to open lock (%)	93.9	96.1	94.2	86.5	97.4	95.0	83.4
Time to complete entire task (seconds)							
Mean	10.2	8.6	10.7	14.2	9.3	9.7	14.2
5th percentile	33.1	23.2	30.0	41.6	26.6	27.8	43.5
25th percentile	13.0	9.4	13.0	17.7	12.6	12.5	18.6
50th percentile	7.3	6.0	7.7	10.5	7.2	6.9	9.7
75th percentile	4.8	4.2	4.9	6.3	4.7	4.6	6.3
95th percentile	3.1	2.8	3.1	3.8	2.9	3.2	3.6

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 4.12: Putting on Blouse[1,2]

Test Performance	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Able to put on blouse (%)	95.1	95.2	95.3	94.2	98.7	97.2	81.4
Able to button blouse (%)	81.0	85.8	79.4	71.2	90.4	84.1	52.1
Time to put on and button blouse (seconds)[4]							
Mean	82.7	70.3	88.4	109.4	78.3	80.2	110.5
5th percentile	190.8	167.3	180.1	213.9	173.4	187.2	200.2
25th percentile	108.4	81.5	109.5	142.8	100.4	104.4	154.0
50th percentile	70.8	58.2	80.5	94.6	66.4	69.8	108.3
75th percentile	50.7	44.0	53.9	66.1	49.1	49.8	72.8
95th percentile	34.6	30.6	38.0	41.2	32.9	35.0	50.4

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Computed for those who completed task correctly.

Table 4.13: Finding and Dialing a Telephone Number[1,2]

Test Performance	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Finding the telephone number (%)[4]							
Found correct number (no prompting)	43.5	52.8	41.2	22.5	46.2	47.6	26.4
Found correct number (prompting)	23.2	19.8	26.1	25.5	23.0	24.2	20.9
Found correct number (with magnifier)	1.3	0.5	1.0	4.7	1.1	1.5	1.4
Found correct number (prompting and magnifier)	0.6	0.5	0.7	0.4	0.4	0.9	0.0
Found incorrect number	7.7	6.7	8.4	8.9	6.5	8.3	8.6
Unable to read print	19.1	15.7	17.9	32.5	19.0	13.8	34.3
Unable to find number	4.6	4.1	4.8	5.6	3.9	3.8	8.5
Dialing the telephone number (%)[4,5]							
Dialed correct number	90.2	94.9	88.6	80.2	90.6	92.9	81.4
Dialed incorrect number	5.5	2.7	6.6	11.2	5.8	5.2	6.0
Unable to understand	0.3	0.6	0.0	0.4	0.6	0.0	0.7
Unable to dial	1.6	1.0	2.4	0.8	0.8	0.3	6.9
Unable to read numbers on telephone	2.4	0.8	2.4	7.4	2.2	1.6	5.1
Time to complete entire task (seconds)[6]	(N=851)	(N=357)	(N=262)	(N=232)	(N=300)	(N=420)	(N=131)
Mean	85.0	72.9	91.7	107.5	81.3	85.0	93.8
5th percentile	183.9	159.7	174.4	237.0	177.6	178.0	220.8
25th percentile	116.2	97.8	119.4	141.2	109.5	117.1	127.9
50th percentile	76.6	62.4	86.1	96.1	72.4	74.5	84.5
75th percentile	48.9	41.7	58.3	61.1	44.8	50.3	62.2
95th percentile	27.2	22.8	31.3	31.9	24.6	27.8	31.0

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 5% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.
[5] Those unable to find the correct telephone number were given the correct number to dial.
[6] Computed only for those who found and dialed the correct number.

5

The Daily Lives of Disabled Older Women

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Day-to-day living circumstances and the immediate physical and social environment can have a tremendous influence on the life quality, functional independence, and capacity of older women in the community. At the same time, functional limitation and disability can profoundly affect daily activities and social conditions. While physical functioning of the older population as a whole and some subgroups is well characterized (Cornoni-Huntley et al., 1986; Prohaska et al., 1993; Short and Leon, 1990), information on living circumstances and daily activities according to level of functional status is much more limited. This chapter describes many aspects of the daily lives of participants in the Women's Health and Aging Study (WHAS), including marital status and living arrangements, living environment, frequency of bedrest and reduced activity, health habits, physical activity, driving practices, eating patterns, social contact and activity, recent life events, and incontinence.

Household Characteristics—Living Arrangement and Housing Type

Table 5.1 describes the living arrangements, household composition, and housing type for this population of disabled older women. Most study participants—46 percent—lived alone, while 23 percent lived with their spouse and just over 30 percent lived with nonspouse others. While most of the married women lived with only their spouse, one quarter of these women (5.7 percent overall) resided with others as well. The households were typically small, with only 21 percent having more than two members. Adult children were the most common living companions, followed by spouse, grandchildren, and other relatives including siblings. The presence of nonrelatives in the household was rare.

Household composition varied greatly by participant age and functional status. Just over one-third of those age 65 to 74 years, over half of those age 75 to 84 years, and 61 percent of the oldest group lived alone. Correspondingly, 32, 19, and 6 percent of women resided with their spouse, among those age 65 to 74, 75 to 84, and over 85 years, respectively. The proportion living with others only was similar across age groups, although the youngest tended to have more household members on average. The extended family household (i.e., living with grandchildren) was most common among those age 65 to 74 years (16.4 percent) and relatively rare for those age 85 years and older (5.3 percent). For women in the youngest age group, the presence of an adult child in the home may be more a function of the child's age and economic situation than of participant need (Speare and Avery, 1993).

The observed variation in living arrangement and household composition by age group reflects, in part, racial differences. Twenty-eight percent of study participants were African American, but this varied greatly by age group. Thirty-three, 26, and 20 percent of women age 65 to 74, 75 to 84, and 85 years and older, respectively, were African American (see Chapter 2, Table 2.1). Marital

status and household composition varied greatly by race (data not shown). Twenty-seven percent of White participants were married and lived with their spouse as against 13 percent of the African American women. Comparing African American with White participants, 46 percent versus 25 percent lived with non-spouse others, 31 percent versus 16 percent had at least three members in their household, 33 percent versus 22 percent lived with an adult child, and 23 percent versus 8 percent lived with grandchildren. The proportion who lived alone, however, was more similar, 41 percent in comparison to 48 percent. For the African American participants the most frequent living arrangement was with nonspouse others, whereas White participants were most likely to live alone.

Participants who received help in activities of daily living (ADLs) were the least likely to live alone and most likely to live with nonspouse others. These "others" were most frequently adult children. More than 37 percent of women who received help in ADLs, in contrast to 22 percent who did not receive help, resided with adult children. This group was also more than twice as likely (7.3 percent versus 3.4 percent) to live with nonrelatives as participants with a less severe level of disability.

More than 70 percent of the study population lived in single-family free-standing or semi-detached homes; 19 percent lived in apartments and 9 percent resided in some type of specialized retirement housing. The high percentage living in semi-detached, row, or town homes probably reflects the unique housing stock of Baltimore. The oldest age group had the highest proportion of apartment and retirement housing residents. Housing-type did not vary greatly by disability level.

Health Status—Self-Rated Health and Reduced Activity Days

Table 5.2 describes self-rated health status and recent activity limitation. The majority (54 percent) of this population of moderate to severely disabled women perceived their health as only poor or fair. Nevertheless, 13 percent believed their health was very good and 4 percent reported excellent health. Self-rated health varied by age group, with the oldest reporting slightly better health: 26.5 percent of the oldest group reported very good to excellent health in contrast to 13.7 and 16.9 percent of women age 65 to 74 years and 75 to 84 years, respectively. The most disabled had the highest proportion who rated their health as fair or poor (62 percent), but this was not substantially higher than the other two groups (55 percent and 49 percent). Among women who received help in ADLs, the proportion who rated their health as fair or poor varied by age group: 65 percent of women age 65 to 74 years, 64 percent of women age 74 to 85 years, and 52 percent of the oldest women (data not shown). Although participants were not asked to rate their health in comparison to others of similar age, these data suggest that the perceived health of many older women is influenced by perceptions of their peers.

Eleven percent of the study population reported staying in bed for more than half a day in the 2 weeks preceding the interview because of illness or injury; 30 percent cut down on their activities for 1 or more days. The likelihood of bedrest and reduced activity was greatest in the women younger than 85 years. While the percent reporting bedrest and reduced activity was lower among the oldest women, the average duration among those reporting bedrest and reduced activity was considerably longer in this age group. Women who received help in ADLs more often reported staying in bed and having reduced activity in the preceding 2 weeks than women with less severe disability. Those who received help in ADLs also had the longest average duration of bedrest and reduced activity.

Health Habits—Cigarette Smoking and Alcohol Consumption

Table 5.3 shows current and past smoking practices by age group and disability level. Current cigarette smoking was uncommon in this

population of disabled older women; half the participants never smoked cigarettes and most who did quit 1 year or more before the study baseline. Smoking history varied greatly by age, a function of both birth cohort and survivorship (Harris, 1983). The oldest women had substantially lower rates of current and past smoking; two-thirds never smoked. In contrast, only 42 percent of women age 65 to 74 years never smoked. Smoking history and disability level were unrelated in this population. Among current smokers, the majority smoked less than one pack per day; only 6 percent of the total population smoked more than 20 cigarettes per day. Most of the current smokers had been smoking for more than 40 years. Among former smokers there was greater variation in the number of years smoked: 33 percent smoked fewer than 20 years, 30 percent smoked 20 to 39 years, and 38 percent smoked at least 40 years. Four percent had quit within the previous year.

Table 5.4 presents information on current alcohol consumption. Very few women in this population regularly consumed alcohol. Only 16 percent reported that they usually drink alcoholic beverages at least once every week, and 10 percent reported having at least four drinks per week. Most of the women who regularly consumed alcohol had one to two drinks per occasion. The frequency of drinking in this group ranged from 1 day a week to every day, with 39 percent reporting drinking 5 or more days a week. There was little notable variation in drinking habits by age or disability level in the study population, with the exception that among women who drank, the most disabled rarely had more than one drink per occasion.

Sleep Patterns

Participants were asked the number of hours they usually slept at night and the number of hours they usually slept during the day. Table 5.5 presents data on nighttime, daytime, and total hours of sleep. For the general adult population, 7 to 9 hours of nighttime sleep is considered adequate and consistent with good health (Belloc and Breslow, 1972). In this population of older disabled women, fewer than half slept between 7 and 9 hours at night. The majority of the remainder slept 4 to 6 hours per night. Daytime sleep was common, with more than 40 percent sleeping some time during the day. Most napped 1 hour or less, although 13 percent got 2 hours and 5 percent got 3 or more hours of sleep during the daytime. For many participants, daytime sleep reduced the nighttime deficit. Combining nighttime and daytime sleep, about half got 7 to 9 hours and about one-third slept 6 or fewer hours in a 24-hour period.

Hours of nighttime sleep did not vary by age or functional status. The likelihood of daytime sleep, however, increased modestly with increasing age and contributed to the slightly higher percentage who slept 10 or more hours per day in the oldest age group (21 percent in contrast to 11 percent and 12 percent for women age 65 to 74 years and 75 to 84 years, respectively). Similar to those age 85 years and older, around 20 percent of the most severely disabled slept 10 or more hours in a 24-hour period.

Physical Activity and Exercise

Table 5.6 describes the frequency of participation in five physically strenuous activities performed most commonly by older women—walking, household chores, outdoor chores, dancing, and regular exercise programs. More than 60 percent of participants reported performing some type of physical activity in the past 2 weeks. The most common activity overall was doing household chores, followed by walking for exercise, although in the oldest age group walking was the more frequent activity. Fourteen percent participated in regular exercise programs, which could include stretching or strengthening activities. Outdoor chores such as gardening were done by 12 percent of the population. Dancing and bowling were uncommon, with less than 6 percent and 2 percent, respectively, reporting participation (data not shown). With the exception of walking, the proportion who participated in each activity de-

creased with increasing age, particularly for household and outdoor chores. The percent who did any physical activity also decreased with increasing age. As expected, participation in physical activity also declined with increasing severity of disability. Women with moderate disability and those with difficulty in ADLs who did not receive help reported similar types and amounts of physical activity. Among women who received ADL help, fewer than one-third did any physical activity, in contrast to over two-thirds of the less severely disabled. Walking was the predominant activity reported by the most severely disabled women.

The amount of time spent in physical activity varied widely. Thirty-eight percent were completely inactive, 16 percent spent less than 1 hour per week in any activity, 20 percent spent 1 to 3 hours and 25 percent were physically active more than 3 hours per week. Hours per week spent being physically active declined with increasing age in the total population and in the subgroup of women who reported any physical activity. For instance, among women age 65 to 74 years who did any physical activity, 48 percent were active 3 hours per week; among those age 85 years and older who did any physical activity, 27 percent were active at least 3 hours per week. Among women who reported walking for exercise, hours spent per week did not decline with increasing age.

Table 5.7 provides data on the number of blocks walked and flights of stairs climbed per week and self-reported walking pace. Distance walked gives a different picture of activity level than time spent walking for exercise per week (Table 5.6). The majority of participants walked less than 7 blocks (about 1/2 mile) over a 1-week period. Distance covered declined with increasing age even after excluding the non-ambulatory. This contrasts with the relationship between age and walking time presented in Table 5.6. Casual strolling was by far the most frequently reported walking pace, over 2.5 times more common than average- to normal-paced walking. Among the women who could walk across a small room, 22 percent did not climb stairs in a typical week, 40 percent climbed between 1 and 20 flights, and 39 percent climbed more than 20 flights per week. The number of flights climbed per week decreased substantially with increasing age. Walking pace, blocks walked, and stairs climbed per week also diminished with increasing severity of disability. This decline was largely a function of higher rates of inability to walk in the most disabled group, although even among the ambulatory, a reduction in blocks walked and flights climbed was observed. Overall, 28 percent walked at least 1 block per day, on average; only 16 percent of the oldest old and 8 percent of the most severely disabled walked this much.

This cohort of older disabled women reported higher levels of participation in physical activity and exercise than might be expected given the high prevalence of difficulty in mobility-related tasks (Table 2.2). The levels of participation in walking and in any physical activity were surprisingly similar to those observed in a general population of older persons (Seigel et al., 1995). While the majority of these women engaged in some form of physical activity, much of it was related to household chores, particularly for the youngest age group. Although walking was also common, the amount of time spent walking and the distances covered were generally short and declined with age.

Driving Practices

The ability to drive a car and having access to a car and driver are important aspects of social functioning. Table 5.8 describes driving status, who usually drives, and the reasons for any change in driving practices. Twenty-five percent of participants were current drivers, 24 percent had quit driving, and 51 percent had never held a driver's license. Although 25 percent could drive, 19 percent were the usual driver (76 percent of the women who could drive) when they traveled by car. Most typically, the usual driver resided outside the participant's home. Six percent of participants reported they never traveled by car. Among

the current drivers, the majority drove less than they used to because of health or vision problems, and among those who had stopped driving, the majority stopped for the same reasons. Another 45 percent quit driving for other reasons, usually related to the costs of buying and maintaining a car.

Driving practices varied by age group, with only 7 percent of women age 85 years and older still driving compared with 32 percent of women age 65 to 74 years. A much higher percentage of the oldest women had quit driving, however. The proportion who never held a license was unrelated to age group. The oldest women were also the least likely to travel by car and, when they did, were most likely to be driven by someone residing outside their home. Women who received ADL help had a very low rate of current driving; most of them had quit due to health problems.

Eating and Meal Preparation

Problems chewing and swallowing, difficulty preparing food, and social isolation are major factors that contribute to poor or inadequate nutrition in older adults (Fischer and Johnson, 1990). Table 5.9 reports the prevalence of difficulties related to eating and meal preparation and describes who prepares meals in the participant's household and the participant's eating environment. Nearly one-fifth of study women reported problems chewing or swallowing that limited their ability to eat. The prevalence of this problem was highest in the youngest age group and in women who received help in ADLs.

Almost four-fifths of study participants had the primary responsibility for preparing meals in their households. This rate decreased from 82 percent of women age 65 to 74 years to 65 percent of women age 85 years and older, largely because of health problems. Among women who received help with ADLs, only 37 percent prepared the meals in their household in contrast to 86 percent of less disabled women. It is notable that among women age 65 to 74 years, only 58 percent of whom lived alone or with only their husband (Table 5.1), 82 percent had the main responsibility for meal preparation. Thus, despite their physical limitations, many of these women made substantial contributions to the household.

The majority of participants ate meals alone. This was not merely a function of living arrangement, because a higher proportion of women age 65 to 84 years ate alone than lived alone (Table 5.1). Meal services such as "Meals on Wheels," "Eating Together" programs, and residential group meals were not widely used by this population of disabled women. The majority of women either had no difficulty preparing meals or they received assistance from someone who resided either with them or outside their home. Of those who had access to group meals at their place of residence—about 8 percent— only about half used this service. Use of meal services was highest in the most severely disabled, but only a small proportion of women who had difficulty preparing meals due to health problems used these services.

Social Contact and Activity

The size of one's social world and the amount of social contact and activity have important implications for life quality. Table 5.10 presents size of life space, the distance participants venture from their home in a typical week; frequency of leaving the home; number of telephone contacts and face-to-face contacts per week; and frequency of attendance at church and other functions reported by this population of disabled women. Social contact and life space varied substantially within and across subgroups of this population. A small but meaningful proportion of women appeared to be fairly isolated and homebound: 23 percent had no face-to-face contact with persons residing outside the home in a typical week, 15 percent never left their home, and 34 percent left their home three or fewer times per week. On the other hand, a sizable percentage were out and about every day. Forty-one percent left their home more than once a day, 49 percent were on the

phone with relatives or friends more than once a day, and the majority had a life space extending beyond the neighborhood.

Social contact tended to diminish with age. The oldest women had the lowest frequency of telephone and face-to-face contact with persons residing outside their home. The majority of the oldest women did not leave their neighborhood in a typical week and had the highest proportion who did not leave their home (29 percent). Similar trends were observed for disability, with the most severely disabled having the highest rates of low contact and not leaving the home.

Over half of these disabled older women participated in church and church-related events in the past year; the majority attended regularly, at least twice a month. About one-third of participants usually attended other social functions, such as concerts, movies and plays, about once a month. Participation in this type of social activity diminished with increasing age and severity of disability.

Life Events

In addition to the day-to-day aspects of one's social and physical environment, major life events, such as the death of a loved one, can have a tremendous impact on affect and feelings of life quality (Holmes and Rahe, 1967). Table 5.11 shows the frequency of six major life events occurring in the past year for this population of disabled older women. Nearly half of the study participants reported the loss of a spouse, close relative, and/or close friend through death in the past year; 7 percent had become separated from a child, friend, or relative on whom they depended for help; and 7 percent lost a pet. Nineteen percent reported giving up a hobby or activity important to them in the past year. Seven percent of all participants (29 percent of the married women) reported that their husband suffered a serious illness or accident. Nearly 70 percent of participants experienced at least one of these events in the past year. The likelihood of death of or separation from relatives or close friends in the past year decreased with age in this population, a function, in part, of less opportunity for such losses to occur. Only 5 percent of the oldest women were still married, and many had outlived most of their friends. With the possible exception of giving up a hobby or favored activity, the rate of major life events did not vary by disability level.

As spousal health has been found to be a major predictor of depressive symptomatology (Simonsick, 1993), married women were asked some additional questions about the health status of their spouse. Fifty-six percent of the married women rated their husband's health as fair or poor, and 30 percent reported that their husband's health had become worse in the past 6 months. Poor or declining health may seriously reduce the capacity of the husband to provide companionship and caregiving assistance.

Incontinence

Bowel and bladder incontinence are socially embarrassing and potentially disruptive conditions that can have multiple effects on the daily activities and social relationships of older women (Wyman et al., 1990). Severe incontinence is a major contributing factor in the decision to institutionalize an older person (Ouslander et al., 1982). Table 5.12 shows the prevalence and severity of bowel and bladder incontinence. Eighteen percent of participants reported occasional bowel incontinence; only 1 percent soiled themselves "all the time." There was a small but consistent age-associated increasing trend in prevalence of bowel incontinence from 17.5 percent in women age 65 to 74 years to 21.9 percent in women age 85 years and older. Prevalence also increased with increasing severity of disability, from 12 percent in the moderately disabled to nearly 30 percent in women receiving help in ADLs.

Bladder incontinence was common in this population, with nearly 65 percent reporting having lost control of their urine at some time

during the past year. The majority (51 percent) had problems because they could not get to the toilet quickly enough; 40 percent had stress-related incontinence, losing bladder control when coughing, sneezing, laughing, or lifting; and 27 percent reported having both problems. Although the annual prevalence was exceptionally high, less than half reporting incontinence lost bladder control on a weekly basis (30.6 percent overall). Nevertheless, 13.6 percent lost control at least once a day. The amount of urine leakage was generally small, with only 7.9 percent overall losing more than one-quarter cup per episode.

The prevalence of bladder incontinence varied somewhat by age, with the oldest age group having the lowest prevalence of any type of incontinence in the past year. Among women who reported problems with bladder control, frequency of episodes and amount of urine lost did not vary consistently by age group. The prevalence of bladder incontinence increased moderately with increasing severity of disability, from 60 percent in the moderately disabled women to 70 percent among women receiving ADL help. Among those with urinary incontinence, the frequency of episodes did not vary much by disability level; the likelihood of substantial loss of urine (more than one-quarter cup), however, was twice as great in the most severely disabled compared with the moderately disabled (21.0 percent versus 8.5 percent).

Summary

This population of older disabled women exhibits great diversity in social environments, activities, health habits, and other life circumstances. Age and level of disability were associated with many of the factors examined, but it is also clear that age and disability do not dictate social environment. The data presented only begin to describe the tremendous range of living environments and social conditions these women face on a daily basis. Briefings by the interviewers and nurse examiners in the WHAS have conveyed the wide spectrum of living environments among these older disabled women. At one extreme are women who live in the most severely impoverished circumstances: unsanitary, dilapidated homes; homes with inadequate light, heating, and plumbing; neighborhoods that suffer from pervasive illicit drug activity and violent behavior; and extreme poverty. At the other extreme are the affluent women who reside in comfortable, well-appointed homes in secure neighborhoods and have paid help, which may include a housekeeper, a cook, and 24-hour nursing care. The rest of the study population is more or less equally distributed between these extremes of poverty and wealth. Despite extreme differences in social and economic resources, these women share many features—functional limitation and disability, chronic disease, and old age. Disentangling the roles of disease and social circumstances in the disabling process could provide important insights for maintaining physical function, preserving community existence, and improving life quality.

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Table 5.1: Living Arrangement and Type of Living Quarters (Percent)[1,2]

Living Arrangement and Housing	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Living arrangements							
Household composition[4,5]							
Alone	46.1	34.6	53.0	61.2	44.6	54.3	26.4
Spouse only	17.4	23.1	15.8	5.1	19.9	15.0	19.0
Spouse and others	5.7	9.4	3.6	0.8	4.9	5.3	8.5
Others only	30.8	32.9	27.7	32.9	30.6	25.4	46.1
Number of others[5,6]							
None	46.1	34.6	53.0	61.2	44.6	54.3	26.4
1	33.4	37.1	32.1	25.9	35.0	29.2	41.7
2	11.6	15.3	8.2	9.9	11.5	10.0	16.0
3 or more	9.0	13.0	6.8	3.1	8.9	6.5	15.8
Household members[4,7]							
Spouse	23.1	32.5	19.3	6.0	24.8	20.3	27.5
Children	24.8	30.2	20.6	20.6	22.8	21.9	37.2
Siblings	3.7	3.9	2.7	5.6	4.7	2.8	4.0
Grandchildren	12.3	16.4	10.6	5.3	15.0	8.6	17.1
Other relatives	7.9	7.8	8.0	7.9	7.5	5.3	15.8
Non-relatives	4.2	4.6	3.8	4.0	3.7	3.4	7.3
Type of living quarters[5,8]							
Detached single-family house	20.3	19.2	20.8	22.0	19.2	20.8	21.1
Apartment[9]	18.6	15.8	19.3	25.4	18.3	20.2	15.2
Semi-detached row house or town house[10]	50.9	57.8	48.3	37.3	50.6	50.0	54.1
Retirement community or apartments	9.0	6.4	9.9	13.9	10.3	8.3	8.0
Other[11]	1.2	0.8	1.6	1.4	1.7	0.7	1.5

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] What are the names of all persons living or staying in the household? Name, relationship to the participant, sex, and age given.
[5] Categories may not add up to 100% due to rounding.
[6] Besides yourself, how many other people live in your household?
[7] Percent of the total number of participants having at least one household member in the category.
[8] Based on interviewer's description.
[9] Includes detached two-to-four family house or apartment; apartment house (five or more units); and apartment in partially commercial structure.
[10] Two or more units in a row.
[11] Includes apartment in a semi-detached or row house; and house and art studio combination.

Table 5.2: Health Status[1,2]

Health Status	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
At the present time, would you say that your health is . . . ?(%)[4]							
Excellent	3.6	2.1	3.5	8.2	3.5	3.2	4.7
Very good	13.4	11.6	13.4	18.3	13.2	15.8	7.1
Good	28.9	29.6	27.6	30.3	34.3	25.9	26.1
Fair	35.5	38.4	34.1	30.6	33.6	38.9	29.8
Poor	18.7	18.3	21.4	12.5	15.4	16.3	32.3
During the last 2 weeks or 14 days, did you stay in bed for more than half a day because of illness or injury?							
Yes (%)	11.4	11.5	12.7	7.8	7.8	9.7	24.0
If yes: Mean days in bed[5]	6.0	6.3	5.3	8.2	5.1	5.5	7.2
Number of days in bed[4]							
1-3 (%)	49.3	44.3	58.1	32.4	56.1	57.0	36.1
4-7 (%)	21.3	24.7	17.7	22.3	24.8	14.9	26.1
8-14 (%)	29.4	31.0	24.2	45.3	19.2	28.1	37.8
Were there any (other) days when you cut down on the things you usually do because of illness or injury?							
Yes (%)	30.0	36.0	28.3	17.2	27.7	29.3	37.0
If yes: Mean days cut down[6]	5.7	5.7	5.5	6.7	4.9	5.7	7.1
Number of days cut down[4]							
1-3 (%)	47.3	46.3	50.3	40.2	52.7	49.3	33.4
4-7 (%)	28.4	30.2	27.6	21.3	29.5	25.7	33.0
8-14 (%)	24.3	23.6	22.1	38.6	17.7	25.0	33.6

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Percents and means are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.
[5] During the last 2 weeks, how many days did you stay in bed more than half the day because of illness or injury?
[6] How many days did you cut down, not counting those when you stayed in bed?

Table 5.3: Cigarette Smoking (Percent)[1,2]

Smoking Status[3]	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[4]	Receives No Help	Receives Help
All Participants	(N = 1002)	(N = 388)	(N = 311)	(N = 303)	(N = 343)	(N = 478)	(N = 181)
Current smoking status[5]							
Never smoked	49.9	41.8	52.4	66.6	44.5	51.2	57.3
Former smoker who quit more than 1 year ago	33.1	36.1	32.5	25.8	34.1	32.7	32.1
Former smoker who quit 1 year ago or less	3.9	4.6	3.8	2.1	5.8	3.2	2.1
Current smoker	13.1	17.5	11.2	5.6	15.7	12.9	8.5
Current and Former Cigarette Smokers	(N = 469)	(N = 224)	(N = 147)	(N = 98)	(N = 182)	(N = 217)	(N = 70)
Cigarette pack years[6]							
Less than 20	43.7	40.4	46.3	51.1	42.2	43.8	47.4
20-39	18.5	16.8	19.5	23.8	18.0	19.1	18.2
40-59	17.6	19.1	17.1	11.9	18.2	18.0	15.1
60 or more	20.1	23.7	17.1	13.2	21.6	19.2	19.3
Current Cigarette Smokers	(N = 115)	(N = 66)	(N = 34)	(N = 15)	(N = 49)	(N = 51)	(N = 15)
Cigarettes per day[7]							
1-19	51.4	51.1	50.1	60.6	43.3	58.1	53.9
20-39	40.9	40.4	41.9	39.4	51.6	32.1	36.8
40 or more	7.8	8.5	8.0	0.0	5.1	9.8	9.3
For how many years have you smoked?							
1-19	2.3	0.0	5.9	3.1	4.8	0.0	1.8
20-39	12.1	15.7	8.3	0.0	17.6	7.5	10.2
40-59	58.8	79.9	30.4	22.4	44.9	73.3	51.8
60 or more	26.9	4.5	55.4	74.6	32.7	19.3	36.3
Former Cigarette Smokers	(N = 354)	(N = 158)	(N = 113)	(N = 83)	(N = 133)	(N = 166)	(N = 55)
Cigarettes per day[7]							
1-19	51.7	47.2	52.6	68.6	50.7	50.7	56.8
20-39	34.8	34.0	37.9	27.0	34.6	37.3	28.0
40 or more	13.5	18.8	9.5	4.4	14.7	12.0	15.2
For how many years did you smoke?							
1-19	32.6	32.1	31.9	37.7	30.0	31.3	42.9
20-39	29.8	28.5	31.0	31.3	23.5	39.0	18.4
40 or more	37.6	39.4	37.2	31.1	46.5	29.8	38.7

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two more domains (see Chapter 1).
[5] Which of the following best describes your current cigarette smoking status?
[6] (c/20)y, where c = cigarettes (On average, how many cigarettes (do/did) you smoke per day?) and y = years (For how many years (have/did) you smoke(d)?)
[7] On average, how many cigarettes (do/did) you smoke per day?

Table 5.4: Alcohol Consumption (Percent)[1,2]

Alcohol Consumption	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
All Participants	(N = 1002)	(N = 388)	(N = 311)	(N = 303)	(N = 343)	(N = 478)	(N = 181)
Do you usually drink alcoholic beverages, including beer, wine, sherry, or liquor, at least once every week?							
Yes	15.6	16.9	14.5	14.5	17.2	14.9	14.0
Current Alcohol Drinkers[4]	(N = 154)	(N = 65)	(N = 44)	(N = 45)	(N = 59)	(N = 72)	(N = 23)
Average drinks per week[5]							
1-3	36.3	34.4	36.7	41.6	38.0	32.5	43.0
4-7	37.5	38.2	36.8	37.3	40.5	33.8	41.2
8 or more	26.2	27.4	26.4	21.1	21.5	33.6	15.9
On the days when you drink, about how many drinks do you usually have?							
1	54.6	47.3	60.9	62.0	56.8	47.1	71.0
2	30.1	29.8	29.7	32.2	26.0	35.8	23.5
3 or more	15.3	23.0	9.4	5.8	17.2	17.1	5.6
Over the past 6 months, how many days per week did you typically drink like this?							
1-2	39.0	44.3	30.1	45.1	35.3	39.6	46.1
3-4	22.3	19.7	27.5	16.7	28.1	17.1	22.9
5 or more	38.7	36.0	42.4	38.2	36.6	43.3	31.0

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 4% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories for each item may not add up to 100% due to rounding.
[5] d(w), where d = drinks per day (On the days when you drink, about how many drinks do you usually have?) and w = days (Over the past 6 months, how many days per week did you typically drink like this?)

Table 5.5: Sleep Patterns (Percent)[1,2,3]

Hours of Sleep[4]	Total (N=903)	Age Group			Disability Level		
		65-74 (N=347)	75-84 (N=269)	85+ (N=287)	Moderate[5] (N=311)	ADL Difficulty	
						Receives No Help (N=438)	Receives Help (N=154)
How many hours do you usually sleep at night?							
3 or less	2.7	2.4	2.7	3.4	1.4	3.5	2.9
4 to 6	44.0	43.0	47.5	38.0	43.5	44.9	42.5
7 to 9	47.7	48.3	45.7	50.9	48.9	47.0	47.0
10 or more	5.7	6.3	4.2	7.6	6.3	4.6	7.6
How many hours do you usually sleep during the day?							
None	57.7	61.1	55.4	53.8	57.3	58.7	55.4
1	24.4	24.9	23.5	25.1	25.0	24.6	22.4
2	12.8	9.9	16.0	13.0	12.2	11.9	16.8
3 or more	5.2	4.2	5.1	8.1	5.5	4.9	5.4
Total hours of sleep per day[6]							
3 or less	0.8	1.3	0.0	1.7	0.1	1.3	0.9
4 to 6	33.6	32.2	37.3	28.1	32.9	33.9	34.2
7 to 9	52.5	55.6	50.3	49.5	53.3	54.3	45.7
10 to 12	11.4	9.6	10.9	17.9	11.6	9.2	17.7
13 or more	1.6	1.3	1.5	2.9	2.0	1.3	1.6

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Due to an error in the administration of the questionnaire the questions were not asked of all eligible participants.
[4] Categories for each item may not add up to 100% due to rounding.
[5] No ADL difficulty; disabled in two more domains (see Chapter 1).
[6] (n+d), where n=hours of sleep at night and d=hours of sleep during the day.

Table 5.6: Participation in Exercise Activities in the Past Two Weeks (Percent)[1,2,3]

Exercise Frequency and Time[4]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[5] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Walked for exercise[6]	33.2	34.6	31.7	32.7	36.2	34.0	24.3
Times per week[7]							
1-2	13.3	13.9	12.9	12.8	15.5	13.4	8.5
3-4	5.8	5.9	6.2	4.8	6.2	6.0	4.8
Over 4	13.8	14.7	12.5	14.8	14.4	14.4	10.8
Hours per week[8]							
Less than 1	12.3	11.5	11.8	16.3	10.4	14.2	11.3
1 to less than 2	9.6	10.7	9.6	6.1	12.2	8.8	6.1
2 or more	10.9	12.2	10.1	9.1	13.4	10.6	6.8
Done moderately strenuous household chores[6,9]	39.2	47.8	36.5	21.5	47.0	45.0	7.3
Times per week[7]							
1	21.9	24.4	21.3	16.5	24.5	26.4	4.4
2 or more	17.2	23.4	15.0	5.0	22.5	18.5	2.9
Hours per week[8]							
Less than 1	17.6	18.9	17.7	13.3	18.7	21.9	3.1
1 to less than 2	7.3	9.6	6.4	3.4	10.5	6.9	1.8
2 or more	14.1	19.0	12.2	4.8	17.5	15.8	2.3
Done moderately strenuous outdoor chores[6,10]	12.0	14.8	10.8	6.9	12.6	15.8	0.0
Times per week[7]							
1	6.0	8.8	4.2	2.6	6.9	7.4	0.0
2 or more	5.9	5.8	6.6	4.3	5.7	8.2	0.0
Hours per week[8]							
Less than 1	4.2	5.2	3.6	2.7	6.6	3.9	0.0
1 to less than 2	2.7	4.1	2.0	0.2	2.6	3.7	0.0
2 or more	5.0	5.2	5.2	4.0	3.4	8.0	0.0
Danced[6]	5.5	6.9	4.9	3.4	6.2	5.6	4.1
Times per week[7]							
1	4.4	5.1	4.0	3.1	5.1	4.0	4.1
2 or more	1.0	1.4	0.8	0.3	1.1	1.2	0.0
Hours per week[8]							
Less than 1	4.4	5.7	3.8	2.2	5.3	4.1	3.5
1 or more	1.0	0.8	1.0	1.2	0.9	1.1	0.6
Participated in any regular exercise program[6,11]	14.2	15.2	14.6	10.4	14.3	16.6	7.3
Times per week[7]							
1-2	3.7	4.6	3.5	1.8	3.3	4.8	1.3
3-4	2.1	2.8	1.6	1.3	2.0	2.5	1.3
Over 4	8.4	7.8	9.5	7.3	9.0	9.3	4.6
Hours per week[8]							
Less than 1	4.1	4.3	3.8	3.9	3.4	5.3	2.0
1 to less than 2	4.9	4.9	5.3	3.9	5.1	5.5	2.8
2 or more	5.2	6.0	5.4	2.6	5.8	5.8	2.5
Any exercise activity[12]	62.0	67.0	60.7	50.7	69.0	67.5	32.0
Hours per week							
Less than 1	16.3	12.2	18.8	21.7	13.8	19.4	13.0
1 to less than 2	13.2	15.2	12.9	7.9	18.8	12.2	4.2
2 to less than 3	7.1	7.2	7.6	5.8	6.6	7.7	6.7
3 or more	24.7	31.9	21.1	13.8	29.4	27.3	7.9

(Women's Health and Aging Study, baseline interview, 1992-1995)

(Continued)

(Continued)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Participants who reported being unable to walk across a small room without help from another person or special equipment were presumed to be non-participants in exercise activities.
[4] Rates for times per week and hours per week may not add up to rate for report of doing exercises because of (1) rounding and (2) amount of exercise not reported.
[5] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[6] The question is in the form "During the past two weeks have you . . . ?"
[7] Response to "How often have you [physical activity] in the past two weeks?" divided by 2.
[8] Derived from responses to: (1) How often have you [physical activity] in the past two weeks? (2) What is the average amount of time that you spent per session?
[9] " . . . like scrubbing and vacuuming?"
[10] " . . . like mowing or raking the lawn, shoveling snow, or working in the garden?"
[11] " . . . such as stretching or strengthening exercises, swimming or any other regular exercise program?"
[12] Includes activities listed in the table, as well as bowling.

Table 5.7: Walking and Stair Climbing in the Past Week (Percent)[1,2]

Walking and Stair Climbing[3]	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[4] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
City blocks or equivalent walked[5]							
Cannot walk[6]	7.1	5.7	7.6	9.4	0.1	4.9	27.4
Less than 1	32.5	26.4	31.9	51.5	28.3	31.8	42.8
1-6	32.0	32.9	34.3	23.3	36.0	32.8	21.8
7-12	12.1	11.9	13.7	8.1	14.4	14.1	1.8
Over 12	16.4	23.1	12.4	7.7	21.3	16.4	6.1
When you walk outside your home, what is your usual pace?							
Does not walk[7]	17.1	14.1	16.3	28.4	6.2	14.1	48.3
Casual strolling	58.6	57.5	59.9	58.6	58.5	64.6	42.1
Average to normal	20.8	22.8	22.2	11.3	31.3	17.2	9.1
Fairly brisk	3.3	5.4	1.7	1.4	4.0	3.7	0.4
Brisk or striding	0.2	0.3	0.0	0.5	0.1	0.3	0.0
Flights of stairs climbed[8]							
Cannot walk[6]	7.1	5.7	7.6	9.4	0.1	4.9	27.4
0	20.1	11.9	23.1	35.8	15.6	21.9	24.4
1-20	36.8	40.9	34.0	32.3	40.3	37.0	29.1
21-40	18.5	21.0	17.7	13.7	20.8	19.5	11.2
Over 40	17.5	20.4	17.6	8.8	23.2	16.7	8.1

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[5] During the last week, about how many city blocks or their equivalent did you walk?
[6] Participants reporting that they were "Unable" to walk across a small room.
[7] Includes participants reporting that they were "Unable" to walk across room or did not walk outside home.
[8] In the last week, how many flights of stairs did you climb up?

Table 5.8: Driving Practices (Percent)[1,2]

Driving Status and History	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
All Participants	(N = 1002)	(N = 388)	(N = 311)	(N = 303)	(N = 343)	(N = 478)	(N = 181)
Participant driving status[4,5]							
Current driver	25.4	32.3	24.8	6.7	29.3	28.9	7.6
Former driver	23.6	16.2	25.7	39.4	20.2	23.4	31.0
Never licensed	51.0	51.5	49.5	53.9	50.5	47.7	61.4
Usual driver[5,6]							
Participant	19.3	23.3	20.0	5.6	22.5	22.9	2.9
Someone in home	26.7	30.1	24.6	22.2	25.9	21.6	42.4
Someone outside home	47.6	42.1	47.8	63.4	46.0	49.2	46.6
Does not travel by car	6.4	4.5	7.6	8.8	5.6	6.3	8.2
Current Drivers	(N = 222)	(N = 125)	(N = 75)	(N = 22)	(N = 90)	(N = 121)	(N = 11)
Drives less because of health or vision[7]	60.2	53.0	67.6	88.8	61.3	56.5	91.8
Former Drivers	(N = 264)	(N = 64)	(N = 80)	(N = 120)	(N = 80)	(N = 126)	(N = 58)
Did you stop driving for health or vision reasons or for some other reason?[5]							
Health	36.9	33.3	38.9	37.8	20.4	38.0	56.9
Vision	18.6	22.9	15.3	19.1	27.1	12.4	20.1
Other reason	44.5	43.8	45.7	43.1	52.5	49.6	23.0

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Driving status was determined by the following questions: (1) When you go somewhere by car, who usually drives? (2) Have you ever had a driver's license? (3) Do you still drive?
[5] Categories may not add up to 100% due to rounding.
[6] When you go somewhere by car, who usually drives?
[7] "Yes" response to "Over the last year, have you cut down on the amount you drive or when you drive (such as not driving at night or in the rain) because of your health or vision?"

Table 5.9: Eating and Meal Preparation (Percent)[1]

Eating and Meal Preparation	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[2] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Do you have problems chewing or swallowing that limit your ability to eat?[3]							
Yes	19.1	21.4	18.5	14.2	15.0	19.5	26.6
Difficulty with meal preparation[3,4,5]							
None	78.3	82.9	76.9	68.8	91.8	84.2	34.1
A little, some or a lot	9.1	8.7	10.2	7.2	3.4	9.6	19.3
Unable/does not do for health reasons	10.0	7.3	10.1	17.6	1.9	4.2	43.0
Does not do for other reasons	2.6	1.1	2.9	6.4	2.9	2.1	3.6
Have you cut back on the number of meals you prepare because your health makes it difficult?[6]							
Yes	18.5	18.9	19.8	13.5	14.9	18.7	25.3
Missing[7]	8.5	10.7	7.0	6.3	8.3	9.8	5.5
Have you changed the types of food you prepare or given up preparing certain foods because your health makes it difficult?[6]							
Yes	17.9	19.8	17.2	14.2	15.7	17.8	22.7
Missing[7]	8.6	10.7	7.0	6.6	8.3	9.9	5.5
Who has the main responsibility for preparing meals in your home?[3,5]							
Participant	77.9	82.2	78.0	64.9	87.5	85.4	37.2
Someone else because of health	15.8	12.8	15.1	26.7	5.0	9.5	56.0
Someone else for other reason	6.3	5.0	6.9	8.4	7.6	5.1	6.9
Receives meals or help preparing meals from someone outside the home[3,8]	8.2	7.6	7.2	12.7	4.7	7.2	18.0
Do you usually eat meals alone?[3]							
Yes	52.2	44.9	59.2	54.8	50.7	57.1	41.8
Do you eat most of your meals in restaurants?[3]							
Yes	1.5	1.3	1.3	2.4	1.5	1.3	1.9
Regular use of "Eating Together" program[3,9]	4.6	3.0	5.4	7.1	4.7	4.6	4.3
Does the place where you live provide group meals?[3]							
Yes	8.4	4.8	9.2	17.2	7.8	8.0	11.0
If yes: Do you usually eat at those group meals?[3]							
Yes	53.1	36.2	51.3	69.4	48.4	55.7	54.8
Do you get Meals on Wheels?[3]							
Yes	1.6	0.5	2.3	2.7	1.6	0.9	3.4

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two more domains (see Chapter 1).
[3] These variables have less than 1% missing data. Results are based on non-missing data.
[4] The screener questions were "Because of a health or physical problem, do you have any difficulty preparing your own meals by yourself?" and "By yourself, how much difficulty do you have?" The presence of the condition was confirmed in the baseline interview.
[5] Categories may not add up to 100% due to rounding.
[6] Not asked if participant indicated that she did not prepare meals, but percentages are based on total populations.
[7] Due to an error in the administration of the questionnaire the question was not asked of all eligible participants.
[8] Does (a/any other) friend or relative come into your home to help you prepare meals or bring you meals on a regular basis?
[9] Do you regularly go out to eat at an Eating Together program such as at a Senior Center or church?

Table 5.10: Social Contact and Activity (Percent)[1,2]

Activity[3]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[4] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Life space[5]							
Home	14.5	10.6	15.1	24.2	7.6	13.4	31.9
Neighborhood	19.3	17.7	17.9	27.6	20.8	17.3	21.7
Beyond neighborhood	66.2	71.7	67.0	48.2	71.6	69.3	46.5
Number of times leaves home per week[6]							
Less than 1	16.6	13.2	15.8	28.9	9.3	14.9	36.6
1-3	17.2	14.5	19.8	17.7	19.9	15.6	15.8
4-7	25.6	24.6	25.8	28.2	24.4	28.0	21.8
Over 7	40.6	47.7	38.6	25.2	46.5	41.6	25.7
Number of telephone contacts per week[7]							
3 or fewer	23.1	19.1	24.5	30.9	19.7	23.2	29.9
4-7	28.1	26.7	28.9	29.9	25.6	30.0	27.9
Over 7	48.8	54.1	46.6	39.2	54.7	46.8	42.2
Number of face-to-face contacts per week[8]							
Less than 1	23.4	18.5	25.1	33.2	17.9	25.0	30.7
1-3	46.0	49.9	43.9	40.4	49.3	43.9	45.1
4 or more	30.6	31.5	31.1	26.4	32.8	31.2	24.2
Attends church or church functions[9]							
Never	45.1	45.2	43.7	49.0	37.8	45.9	58.2
Once a month or less	8.0	7.5	8.8	7.5	5.8	8.2	12.0
At least twice monthly	46.8	47.3	47.5	43.5	56.4	45.8	29.8
Attends other functions[10]							
Never	67.4	61.0	70.6	77.4	62.2	66.0	82.2
Once a month or less	21.8	27.2	18.8	14.2	26.6	21.0	14.3
At least twice monthly	10.8	11.8	10.6	8.4	11.3	13.0	3.5

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[5] During a typical week, do you leave your neighborhood? During a typical week, weather permitting, do you go outside the house, but stay in your neighborhood?
[6] Tell me how many times in a typical week that you leave your neighborhood? How many times in a typical week do you go outside but stay in your neighborhood? Responses were converted to real-number estimates of times per week and then summed to produce the total.
[7] In a typical week, about how many times do you talk on the telephone with friends, neighbors or relatives?
[8] How often do you get together with friends, neighbors or relatives?
[9] Do you attend church or church functions? How often do you attend church or church functions?
[10] Do you attend other events such as concerts, movies, or ethnic festivals? How often do you attend other events?

Table 5.11: Life Events in the Past Twelve Months (Percent)[1,2]

Event	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Were you widowed . . .?[4]							
Yes	2.6	3.0	2.9	0.8	2.3	3.1	2.0
Has your husband been seriously ill or had a serious accident . . . ?[4]							
Yes	7.0	9.3	6.2	2.3	7.9	6.2	7.2
Have you lost (a/any other) close relative or very close friend through death . . . ?[4]							
Yes	46.6	44.9	48.7	46.2	48.7	44.8	47.3
Have you been separated from a child, close friend or relative whom you depend on for help . . . ?[4]							
Yes	7.4	7.4	7.1	7.8	5.5	7.3	11.2
Did you lose a pet . . . ?[4]							
Yes	6.6	8.7	5.4	3.4	5.2	6.9	8.7
Have you had to give up a hobby or activity that is important to you . . . ?[4]							
Yes	19.1	17.4	19.5	23.3	14.6	21.4	22.2
Did anything (else) happen to you, either good or bad . . . that was very important to you?[4]							
Yes	19.7	23.3	17.4	15.5	17.3	20.9	21.4
Number of items with "Yes" response[5]							
0	30.7	28.7	31.9	33.4	33.6	28.4	31.2
1	39.7	39.6	39.0	42.3	38.3	42.2	35.8
2 or more	29.5	31.7	29.1	24.3	28.1	29.3	33.1

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The phrase "(with)in the past 12 months" is included in the question.
[5] Categories may not add up to 100% due to rounding.

Table 5.12: Percent Reporting Incontinence[1,2]

Incontinence Status	Total (N = 1002)	Age Group: 65-74 (N = 388)	Age Group: 75-84 (N = 311)	Age Group: 85 + (N = 303)	Disability Level: Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Do you ever lose control of normal bowel movements so that you soil yourself?							
All the time[4]	0.8	0.8	0.9	0.4	1.0	0.3	1.5
Occasionally	18.1	16.7	18.3	21.5	10.9	20.0	27.6
Colostomy/ileostomy	0.5	0.5	0.5	0.9	0.1	0.7	0.9
In the last year have you had any problem with losing control of your urine . . . ?							
A. When you cough, sneeze, laugh, or lift things Yes	40.4	42.6	40.7	33.0	37.7	42.7	39.3
B. Because you could not get to the toilet quickly enough Yes	50.9	50.7	52.0	48.7	42.6	52.4	64.1
If yes to both A and B	27.3	29.6	25.5	25.8	21.3	29.0	35.4
Any episode of urinary incontinence[5]	64.6	64.8	67.1	57.5	59.5	66.8	69.3
During the past month, how often have you lost control of your urine?[6]							
Several times a day	7.4	5.8	8.3	9.7	5.5	8.4	8.8
Once a day	6.2	5.5	7.4	5.3	6.1	6.1	7.1
Several times a week	9.5	10.3	8.8	9.3	8.0	8.8	14.8
Once a week	7.5	8.5	7.2	5.5	7.4	8.6	4.4
Less than once a week	23.0	23.4	23.4	20.7	21.2	24.5	22.6
No incontinence in past month[7]	45.3	45.2	44.0	49.2	51.8	43.4	37.1
When you lose control of your urine, approximately how much do you lose?[6]							
More than ¼ cup	7.9	7.4	8.9	6.7	5.0	8.0	13.7
1 teaspoon to ¼ cup	14.3	13.1	14.9	16.4	13.4	14.2	16.4
Less than or equal to 1 teaspoon	13.6	16.1	11.9	10.7	9.2	16.4	14.7
A few drops	27.8	27.3	30.2	23.0	31.4	27.8	20.4
No incontinence in past year[8]	35.4	34.9	33.1	42.9	41.0	33.4	29.4
Currently catheterized[9]	1.0	1.3	1.0	0.4	0.0	0.2	5.2

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two more domains (see Chapter 1).
[4] Frequency was determined by the response to "Do you have occasional soiling or does it happen all the time?"
[5] Responded "Yes" to (1) at least one of the questions about urinary incontinence above or (2) In the last year have you had any problems with accidentally losing control of your urine or bladder function that is, do you wet yourself?
[6] Categories in this item plus "Currently Catheterized" may not add up to 100% due to rounding.
[7] Responded "Never" to this question or "No" to all three questions about losing control of urine in the past year.
[8] "No" to all three questions about losing control of urine in the past year.
[9] Determined by a response of "Catheterized" to the question about losing control of urine in the past year, or to the question "How may times during a typical night do you get up to urinate?"

6

Utilization of Health Services, Insurance Coverage, and Ability to Afford Care

Marcel E. Salive, Judith D. Kasper, Elizabeth A. Skinner, Sam Shapiro

People age 65 years and older use health services more often and with greater intensity than the younger population. Within the older population itself, the highest service use is seen for those with disabilities and poor health (Hahn and Lefkowitz, 1992; Wolinsky et al., 1983). This chapter describes service use among the community-resident participants in the Women's Health and Aging Study (WHAS), all of whom are moderately to severely disabled.

Insurance Coverage and Ability to Afford Care

For younger people, insurance coverage is a major determinant of access to medical care (Aday et al., 1984; Lefkowitz and Monheit, 1991). Among people age 65 years and older, however, 95 to 97 percent have coverage for basic health care provided through the Medicare program. Since Medicare enrollment files were used to generate the WHAS sampling frame, all study participants have Medicare coverage. There is variation, however, in public and private coverage that supplements Medicare. This supplemental coverage is significant since it both reduces out-of-pocket costs and covers services that are not part of the Medicare benefit package.

Some elderly people with incomes below the poverty level who meet means testing requirements may obtain Medicaid coverage. One-fifth of the older disabled women in the WHAS were covered by Medicaid (Table 6.1) and another 2 percent reported that some other public assistance program helped pay for medical care. National data indicate that from 8 to 12 percent of persons age 65 years and older have Medicaid as well as Medicare coverage (Chulis et al., 1993). Medicaid coverage is two to three times higher, however, among persons who report poor health (26 percent in Chulis et al., 1993). Poor health was more commonly reported among women eligible for the WHAS than among physically able women (see Chapter 1, Table 1.2). Among older disabled women, there is no clear relationship between Medicaid coverage and severity of disability, although there was a slight decline in reported coverage with increasing age.

Two-thirds (67 percent) of WHAS respondents reported that they had private supplemental coverage, in addition to Medicare, that paid for hospital or physician care. The 1987 National Medical Care Expenditure Survey (NMES) and the 1991 Medicare Current Beneficiary Survey (MCBS) found that 75 percent of people age 65 years and older nationwide had private supplemental coverage (Chulis et al., 1993). Among people in poor health, this type of coverage was lower (around 50 percent in the MCBS), in contrast to their higher Medicaid coverage. Among the most severely disabled—those women receiving assistance with activities of daily living (ADLs)—53 percent reported having supplemental coverage, a lower percentage than among less severely disabled

women (65 percent of moderately disabled women and 74 percent of those who had difficulty with ADLs but received no help). Supplemental insurance coverage for prescription medicines was much lower, reported by only a little more than one-third of older disabled women. Among women 85 years and older only one-quarter reported having insurance that helped pay for medications.

Three-quarters of the women sampled indicated they never had a problem affording the kind of medical care they (and their husbands) should have. Women in the oldest age group were more likely to say they never had a problem than those in the youngest age group (87 and 72 percent, respectively). Overall 9 percent said they had a problem affording care fairly often or very often. There was no clear relationship, however, between problems affording care and disability level.

Hospital Inpatient and Nursing Home Admissions

One-quarter of these older disabled women reported they had been hospitalized overnight during the past year (Table 6.2). In calendar year 1991, 17.5 percent of all elderly Medicare beneficiaries were hospitalized at least once (Chulis et al., 1993). The average length of hospital stay was 11 days for women in the WHAS population who had been hospitalized. The median was considerably shorter, 6 days, indicating that this sample contained some women who had very long stays. Average length of stay per person ranged from 8 days for moderately disabled women to 16 days for the most severely disabled.

Only 1 percent of these older disabled women had been in a nursing home in the past year, staying on average 3 to 4 weeks (mean, 28 days; median, 21 days). The proportion with a recent nursing home stay ranged from 0.1 percent for the moderately disabled to 3.2 percent for women who received help with ADLs. Many studies have documented a relationship between ADL disability and nursing home use (Branch and Jette, 1982; Murtaugh et al., 1990; Salive et al., 1993). A population of functionally limited women should be expected to have higher rates of nursing home admission over time than a representative cross section of older women. At baseline only community-resident women were recruited into the WHAS, so the virtual absence of recent nursing home use is not surprising.

Ambulatory and Preventive Medical Care

Nearly 9 out of 10 participants (89 percent) had seen a physician in the 6 months prior to the baseline interview, four times on average (Table 6.3). This figure is consistent with national estimates of physician contact for community-resident women age 65 years and older (Benson and Marano, 1994). Among older disabled women, there was little variation by age or functional status in likelihood of a physician visit, although mean number of visits in 6 months was lower for the oldest women (3.0 compared with 4.2 for women in the two younger groups). Virtually all the study participants indicated they had a regular source of care for illness or health advice (96 percent). This is consistent with national data from the NMES, which reported that 90 percent of those age 65 years and older reported a usual source of medical care (Cornelius et al., 1991).

Slightly over half of these older disabled women reported having a flu shot (influenza vaccination) in the past year, with little variation according to age and disability. Medicare began covering flu shots for elderly beneficiaries effective May 1, 1993, which was during the WHAS enrollment period (November 1992-February 1995). Medicare coverage is likely to substantially increase influenza vaccination rates among older people in the future. In 1991, 41.5 percent of older women reported receiving a flu shot in the previous year and rates have been increasing over time (Centers for Disease Control and Prevention, 1995).

Services From Other Health Care Professionals: Therapists, Mental Health Professionals, and Nurses

The use of health care professionals other than physicians is generally low among older disabled women (Table 6.4). Fewer than 5 percent made use of an occupational therapist, a speech therapist, a hearing therapist, or a mental health professional in the 6 months prior to the baseline interview. Use of physical therapy and visiting nurse or home health services was somewhat more common. Fourteen percent reported physical therapy and 13 percent reported in-home assistance from a visiting nurse, home health aide, or nurse's aide. The most disabled women were much more likely than the less disabled women to use the services of health professionals other than physicians. Over a 6-month period, they were about twice as likely to receive physical therapy, occupational therapy, speech therapy, or mental health services. Almost 35 percent of women receiving ADL help used the services of a visiting nurse, home health aide, or nurse's aide.

Intensity of service use is reflected in the mean and median number of visits. Among users of physical or occupational therapy, which are rehabilitative services, the mean number of visits in a 6-month period was high (14 and 15 visits, respectively). The median number of visits for physical therapy was substantially lower, indicating the presence of some very high users of these services. Similarly, although very few women used mental health services, those that did averaged about five visits per person in the previous 6 months. For most of these services, the intensity of use was greatest for the most disabled users.

Summary

As would be expected among older women with functional limitations, the use of health services was relatively high. In most instances, these women used more health services than those of similar age in the general population. The somewhat higher coverage by Medicaid and lower supplemental private coverage is also consistent with what might be expected in a more disabled population. The urban east coast location of the study population and higher proportion of minority and poorly educated women also may influence patterns of service use and coverage. It is also important to note that these data on service use are based on self-report. For future studies of health care utilization by this cohort of older disabled women, more complete information will be available from Medicare claims files.

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Table 6.1: Insurance Coverage and Ability to Pay for Care (Percent)[1,2]

Insurance and Ability to Pay	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Are you covered by Maryland's Medical Assistance (MEDICAID) program?							
Yes	20.1	21.5	19.7	17.3	24.9	14.5	26.1
Are you covered by any other public assistance program that pays for medical care?							
Yes	2.4	2.2	3.2	1.1	3.9	0.9	3.5
Not counting Medicare, Medical Assistance or the programs I just asked about, do you have any other health insurance or medical insurance that pays hospital or doctor bills?							
Yes	67.1	65.4	67.1	72.3	64.8	73.9	52.9
Not counting Medicare or Medical Assistance, do you have any health insurance plan or medical insurance that pays for prescription medicines?							
Yes	35.6	37.7	37.1	25.3	33.8	38.4	31.6
How often does it happen that you (and your husband) do not have enough money to afford the kind of medical care you (and your husband) should have?[4]							
Never	76.4	72.3	77.0	87.0	76.8	77.6	72.2
Once in a while	14.5	16.7	14.2	8.9	17.2	12.0	15.8
Fairly often	4.0	4.2	4.3	2.5	3.3	4.6	3.7
Very often	5.1	6.8	4.6	1.6	2.8	5.7	8.3

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.

Table 6.2: Utilization of Hospital Inpatient and Nursing Home Care[1,2]

Utilization History	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Have you stayed overnight in a hospital during the past 12 months?							
Yes (%)	27.0	25.2	31.4	20.6	23.5	24.8	40.8
If yes: Median number of days[4]	6.0	6.0	8.0	5.0	5.0	6.0	8.0
Mean number of days	11.1	10.2	12.0	10.3	7.7	10.4	16.4
Have you stayed in a nursing home during the past 12 months?							
Yes (%)	1.0	0.4	1.5	1.7	0.1	0.9	3.2
If yes: Median number of days[5]	21.0	17.5	10.5	30.0	30.0	14.0	30.0
Mean number of days	28.4	17.7	26.3	41.7	30.0	36.7	22.4

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] How many nights did you stay overnight in the hospital during the past 12 months?
[5] Altogether, how many days did you stay in the nursing home (during the past 12 months)?

Table 6.3: Ambulatory and Preventive Medical Care[1,2]

Medical Care	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
In the last 6 months, have you seen a doctor in his or her office or a clinic or at your home?							
Yes (%)	88.6	88.0	89.9	86.8	87.9	89.1	88.6
If yes: Mean number of visits[4]	4.0	4.2	4.2	3.0	3.6	4.2	4.4
Is there a regular doctor or a particular clinic, health center, doctor's office or other place that you usually go if you are sick or need advice about your health?							
Yes (%)	95.8	96.8	94.8	95.4	95.1	96.5	95.1
Have you had a flu shot in the past year?							
Yes (%)	53.5	53.8	52.5	55.3	55.0	53.5	50.0

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] How many times have you seen a doctor in his or her office or a clinic or at your home?

Table 6.4: Use of Therapists, Mental Health Professionals, and Nursing Services in the Last Six Months[1,2]

Service Provider	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Physical therapist[4]							
Yes (%)	13.9	14.0	14.3	12.6	8.5	13.5	26.3
If yes: Median number of visits[5]	6.0	8.0	8.0	5.0	5.5	6.0	8.0
Mean number of visits	13.5	15.0	11.9	13.4	12.8	12.0	16.0
Occupational therapist[4]							
Yes (%)	2.1	2.9	1.7	0.4	0.3	1.9	6.1
If yes: Median number of visits[5]	13.5	15.0	12.0	43.5	3.0	13.5	16.0
Mean number of visits	15.0	15.8	11.2	44.6	3.0	11.7	19.6
Speech therapist[4]							
Yes (%)	0.9	1.2	0.6	1.0	0.3	0.4	3.7
If yes: Median number of visits[5]	3.5	3.0	2.0	5.0	1.0	3.5	5.0
Mean number of visits	6.7	6.6	2.0	14.4	1.0	3.3	8.8
Hearing therapist[4]							
Yes (%)	4.2	4.0	4.1	5.4	4.0	3.9	5.7
If yes: Median number of visits[5]	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Mean number of visits	2.0	1.5	2.9	1.4	3.3	1.3	1.5
In the last 6 months, have you discussed any personal problems with a psychiatrist, a psychologist, or any other mental health professional?							
Yes (%)	3.7	5.2	2.7	2.1	2.6	3.7	6.0
If yes: Median number of visits[6]	4.0	4.0	3.0	3.0	3.0	4.0	4.0
Mean number of visits[6]	4.6	5.1	3.6	4.1	5.4	4.4	4.1
Visiting nurse, home health aide, or nurse's aide[7]							
Yes (%)	12.7	8.8	16.0	15.5	6.9	9.2	34.6
If yes: Median number of visits[8]	15.0	13.0	18.0	15.0	12.0	11.0	24.0
Mean number of visits	33.1	34.5	27.3	47.4	19.3	17.0	51.0

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] With the following exceptions all variables have less than 1% missing data: number of physical therapist visits, 3.6%; number of occupational therapist visits, 5.3%; number of visiting nurse, home health aide, or nurse's aide visits, 6.7%. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question is in the form "In the last 6 months, have you seen a(an) . . . ?"
[5] How many times have you seen a (an) [service provider]?
[6] How many times have you discussed any personal problems with a psychiatrist, a psychologist, or any other mental health professional?
[7] The question is in the form "In the last 6 months, have you received nursing services at home from someone such as a . . . ?"
[8] How many times have you received nursing services at home from someone such as a visiting nurse, home health aide, or nurse's aid?

7

Instrumental and Emotional Support

Judith D. Kasper, Caroline L. Phillips, Eleanor M. Simonsick, Pearl S. German

The nature and extent of social relationships can have a significant influence on health and well-being (Cohen and Syme, 1985; House et al., 1988). Supportive relationships contribute to improved health outcomes, and inadequate social support has been identified as a major risk factor for premature mortality (Berkman and Syme, 1979; House et al., 1982). Social relationships provide both instrumental and emotional support. For community-resident older women with functional limitations and disability, the presence and availability of assistance from both informal and formal care providers have important implications for their continued maintenance in the community. Adequacy of emotional support is also meaningful as it can affect life quality and influence mental health (Berkman and Syme, 1979; Cohen and Syme, 1985).

The Women's Health and Aging Study (WHAS) obtained information on various aspects of social relationships. This chapter focuses on instrumental and emotional support according to age group and disability level. Instrumental support encompasses the presence and source of assistance with a variety of tasks: basic self-care activities of daily living (ADLs) including bathing, dressing, getting in and out of bed or chairs, eating, and using the toilet; and instrumental activities of daily living (IADLs) such as meal preparation, housework, shopping, using the telephone, taking medications, and managing money. Emotional support comprises the presence of a confidant and the confidant's relationship to the participant, as well as perceived adequacy of emotional support.

Helping Relationships and Assistance With Routine Activities

Table 7.1 describes the number and characteristics of persons who provided help with ADLs and/or IADLs. About 15 percent of older disabled women reported receiving no assistance from others in either self-care or other routine activities. Forty percent identified one helper, and the remaining 46 percent named two or more. The likelihood of receiving help and the number of helpers varied by age. Women age 85 years and older had the highest percentage of multiple helpers. More than 60 percent of women in this age group had two or more helpers, and 10 percent reported four or more. Women receiving help with at least one ADL were more likely to have multiple helpers than less severely disabled women. Close to one-quarter had three helpers, and another 17 percent had four or more. Sizable percentages of women with moderate disability (80 percent) and those with ADL difficulty who did not receive ADL help (85 percent) received assistance with tasks other than ADLs that are important for community living. Of these women, those with ADL difficulty were more likely to have multiple helpers than the moderately disabled.

Typically, family and friends are the primary providers of assistance with ADLs and other routine activities of daily living (Cantor, 1980; Doty, 1986; Jette et al., 1992; Stone et al., 1987). In this population of functionally limited to severely disabled older women, 22 percent reported receiv-

ing help from their spouse, close to 40 percent from a daughter or daughter-in-law, and 22 percent from a son or son-in-law. A substantial percentage (29 percent) also reported receiving assistance from some other relative, including siblings. In contrast to younger women, those age 85 years and older were much less likely to receive assistance from a spouse (less than 5 percent), although mention of help from relatives other than a spouse remained fairly consistent across age groups. Daughters and daughters-in-law played relatively prominent roles in providing help. Their role increased in importance with increasing severity of participant disability: 36 percent of the moderately disabled reported help from daughters and/or daughters-in-law compared with almost 50 percent of those receiving ADL help.

Paid helpers were used by nearly 40 percent of these women, although they were rarely the sole source of assistance. The percentage of women receiving help from paid providers only was 15 percent. The proportion using paid assistance rose with increasing age, with 25 percent of the youngest women having any paid helpers and 57 percent of the oldest women using paid help solely or in addition to unpaid assistance. The proportion using paid help also increased with increasing severity of disability. About one-third of moderately disabled women had paid assistance, whereas over half of women receiving ADL help had at least one paid helper. Sole use of paid help, however, was lower among the oldest women than those age 75 to 84 years, and among the most severely disabled women in contrast to the less disabled women. This suggests that paid help is used to supplement unpaid assistance in the more disabled subgroups.

While older disabled women often reside with their care providers, many do not, even among those who require assistance with ADLs. Overall about 30 percent of the women received all their help from persons who lived with them. The percentage was highest for women age 65 to 74 years, many of whom had only one or two helpers, often a spouse or another member of the immediate family. The oldest women were least likely to live with any of their helpers (64 percent), which is consistent with the high percentage of women in this age group who lived alone (see Chapter 5, Table 5.1). This residence status may also contribute to their considerable use of paid help. In contrast, a substantial majority of women who received help with ADLs lived with at least one of their helpers (68 percent), yet nearly one-third lived independent from any helper. Over one-third of the most severely disabled had some helpers who lived with them and some who did not; this is consistent with their reliance on a combination of paid and unpaid help.

Women with ADL difficulty who reported receiving help were asked to identify a primary caregiver. When more than one person helped with ADLs, the recipient was asked who they "relied on the most for help." Table 7.2 presents the characteristics of these caregivers. About 22 percent of these women named their spouse as their primary helper. Since 29 percent of women receiving ADL help were married (see Chapter 2, Table 2.1), it appears that most married women in the most disabled group relied on their spouse as their primary caregiver.

Over one-quarter of women receiving ADL help named a daughter or daughter-in-law as their primary helper. The major role of daughters and daughters-in-law in providing assistance with long-term care needs of older people has been documented previously (Stone et al., 1987). Reliance on daughters and/or daughters-in-law increased with the age of the participant, from 27 percent in women age 65 to 74 years to 37 percent of the oldest old, mirroring the decrease in reliance on a spouse. Twenty-two percent of the most disabled women named a nurse or nurse's aide as their primary caregiver; this proportion rose with increasing participant age, from 17 percent among those age 65 to 74 years to 32 percent among those age 85 years and older. The percentage of primary helpers who were paid was somewhat higher, especially for the oldest women (44 percent). These additional paid helpers could be drawn from both relatives and non-relatives. Given the downward trend in reliance on spouses with increasing participant age, and the increasing importance of daughters and daughters-in-

law, nurses, and nurse's aides, it is not surprising that women predominated as primary caregivers. Women accounted for about two-thirds of the primary caregivers, with the oldest participants most likely to mention a woman in this role (86 percent).

Table 7.2 also presents the residential status of the primary caregiver and the activities for which he or she provided help. Among women who received ADL help, those age 65 to 74 years were more likely to live with their primary helper than were the oldest participants, 63 and 40 percent, respectively. This is primarily a function of marital status and reflects the much higher proportion of spouses among primary caregivers for women age 65 to 74 years. Among women age 85 years and older, spouses represented only 1 percent of primary helpers, while nearly 44 percent were paid helpers. Overall, about 80 percent of primary helpers assisted with one or two ADLs, and the remaining 18 percent assisted with three to five ADLs. This distribution varied somewhat by age, with 15 percent of helpers assisting with three to five ADLs for women age 65 to 74 years and 25 percent for women age 85 years and older. Eighty-seven percent of the primary ADL care providers also assisted with at least one IADL.

Providing assistance to persons with functional limitations can encompass a broad range of activities. Table 7.3 gives the percentage who received personal assistance for each of five ADLs and seven IADLs. For each task, participants were asked if they received any help whether or not they reported difficulty with the task (see Chapter 4). Among the ADLs, help was most often provided with bathing, followed by dressing. This same hierarchy has been observed in representative national samples of older persons (Prohaska et al., 1993). For the IADLs, over 70 percent of women received help with heavy housework, more than half with shopping for personal items, more than one-third with both light housework and money management, and more than one-fifth with meal preparation. The percentage of women receiving assistance across tasks increased with age and severity of disability for nearly all tasks. Variation by age in the percentage who received assistance was less dramatic for the ADLs, particularly getting in and out of bed or chairs, eating, and using the toilet, all of which had low overall prevalence of help received. Substantial percentages of women age 85 years and older and even higher percentages of those receiving ADL help received assistance across all tasks.

Emotional Support

Emotional support, typically operationalized as the presence of one or more persons with whom thoughts and feelings can be shared, has been identified as an important determinant of general health and well-being (Cohen and Syme, 1985). Table 7.4 presents data on the presence and type of confidant. Over 90 percent of these disabled older women reported having a person with whom they could share feelings or on whom they could depend. A child, other relatives, friends, or neighbors were most frequently mentioned. Although 24 percent of these women were married (see Chapter 2, Table 2.1), only 5 percent identified a spouse as their confidant. This may indicate that most of the married women interpreted this question to mean someone other than a spouse or, as at least one other study has found, spouses were not the first choice of confidant among older women (Connidis and Davies, 1992). Although most women indicated they had someone to confide in, almost one-third reported they could have used more emotional support in the previous year. This percentage was higher (36 percent) among those age 65 to 74 years than among those age 85 years and older (25 percent). Over 45 percent of the most severely disabled women reported they could have used more emotional support, compared with less than 30 percent of less severely disabled women. Women who felt they needed more emotional support were about equally divided in terms of whether they needed a lot, some, or a little more support, except for those age 85 years and older, who rarely reported that they needed a lot more support.

Summary

Support from family and friends and assistance in daily activities are vitally important influences on the lives of older disabled women in areas ranging from functional status to life satisfaction. In this chapter, the nature of caregivers and the tasks for which they provided help, including both instrumental and emotional support, were examined. Characteristics of people providing assistance in basic daily tasks varied with the age of the WHAS participant: the younger women were more likely to rely on spouses than the older women, who were more likely to rely on their daughters and/or daughters-in-law. Older and more profoundly disabled women tended to have a larger network of helpers which often included paid providers. Additional information on caregiving relationships is being collected in a separate study of caregivers to the WHAS population under a grant supported by The Commonwealth Fund.

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Table 7.1: Receipt of Instrumental Support: Number, Relationship, Compensation, and Resident Status of Helpers (Percent)[1,2]

Characteristics of Helpers	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Number[4,5]							
None	14.6	17.0	15.5	5.1	20.9	15.4	0.0
1	39.9	41.0	41.1	33.4	41.8	42.6	28.5
2	25.9	24.0	24.7	34.5	24.9	24.8	30.8
3	13.1	10.9	14.0	17.1	7.0	13.4	24.1
4 or more	6.6	7.1	4.8	10.0	5.5	3.9	16.6
Relationship to participant[6]							
Spouse	22.3	33.0	18.3	4.6	25.2	18.3	26.9
Daughter/daughter-in-law	38.0	41.8	34.5	36.5	36.4	34.1	49.6
Son/son-in-law	22.1	22.4	21.5	23.0	15.9	26.1	23.2
Sibling	6.9	6.8	6.1	9.3	6.0	7.6	6.9
Other relative	22.3	23.3	19.4	26.6	24.8	17.8	28.6
Paid non-relative	32.4	19.0	38.2	52.7	27.4	31.9	41.7
Unpaid non-relative	12.7	10.9	12.7	17.1	8.8	13.5	17.1
Remuneration status[5]							
All paid	15.1	10.8	19.6	15.0	17.0	16.8	8.0
All unpaid	61.3	74.8	54.6	43.0	67.7	62.9	47.1
Paid and unpaid	23.6	14.4	25.8	42.0	15.3	20.4	44.9
Residence status[5]							
All live with participant	30.3	39.5	26.3	16.1	37.9	24.2	31.9
None live with participant	48.8	36.6	55.6	64.0	45.0	58.9	31.5
Both arrangements	20.9	24.0	18.1	20.0	17.1	16.9	36.6

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The participants were asked to name up to three (or four for meal preparation) helpers for the following activities: bathing or showering, dressing, getting in or out of bed or chairs, eating, using the toilet including getting to the toilet, preparing meals, doing heavy housework, doing light housework, shopping for personal items such as medicines or toilet items, using the telephone, taking medications, and managing money.
[5] Categories may not add up to 100% due to rounding.
[6] Percent of participants having at least one helper in these categories.

Table 7.2: Characteristics of the Primary Helper for Women with ADL Difficulty Who Receive Help (Percent)[1,2,3]

Characteristics of Helpers	Total (N = 181)	Age Group 65-74 (N = 58)	75-84 (N = 57)	85 + (N = 66)
Relationship to participant[4,5]				
Spouse	22.2	33.1	22.1	1.0
Daughter/daughter-in-law	28.0	26.7	24.9	37.2
Son/son-in-law	4.1	6.9	1.8	3.9
Sibling	3.8	3.3	4.9	2.6
Other relative	6.8	5.2	6.8	10.0
Friend/neighbor	8.1	6.3	12.8	1.6
Nurse/aide	22.7	17.2	23.4	31.9
Other/non-relative	4.3	1.4	3.4	11.8
Gender[6]				
Male	26.3	40.0	23.9	4.9
Female	62.9	52.4	61.7	86.0
Not ascertainable	10.8	7.7	14.4	9.1
Residence[7]				
Lives with participant	56.3	62.9	58.0	40.1
Number of ADL tasks in which helper provides assistance[8]				
1	52.1	55.6	49.6	50.8
2	30.0	29.3	33.3	24.6
3	8.5	3.7	9.1	16.8
4	6.9	8.5	6.7	4.6
5	2.4	2.9	1.5	3.2
Assists with a least one IADL task[9]	87.2	86.9	85.3	91.8
Paid for help[10]	32.1	22.4	35.6	43.9

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] These variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] In the last year, who have you relied on the most for help with the activities I've mentioned?
[4] What is [person's] relationship to you?
[5] Categories may not add up to 100% due to rounding.
[6] Gender of caregivers was not asked directly. Primary helpers whose relationship to the participant is "nurse/aide" or "houseworker/maid" are assumed to be female. Gender is unascertainable for primary helpers whose relationship to the participant is "partner/roommate", "friend/neighbor", or "other non-relative."
[7] Does [person] live with you or not?
[8] Out of a possible 5 tasks: bathing or showering, dressing, getting in or out of bed or chairs, eating, and using the toilet including getting to the toilet.
[9] IADL tasks include preparing meals, doing heavy housework, doing light housework, shopping for personal items, using the telephone, taking medications, and managing money.
[10] Is [person] paid to help you or not?

Table 7.3: Tasks for Which Help Received (Percent)[1,2]

Task	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85 + (N=303)	Moderate[3] (N=343)	ADL Difficulty	
						Receives No Help (N=478)	Receives Help (N=181)
Bathing or showering[4,5]	16.3	13.3	17.0	23.3	2.5	2.0	84.6
Dressing[4,5]	11.2	10.6	10.9	13.7	2.8	1.5	55.5
Getting in and out of bed or chairs[4,5]	4.2	3.2	4.7	6.0	0.1	0.3	23.7
Eating[4,5]	1.7	2.2	0.9	2.3	0.1	0.0	9.6
Using the toilet including getting to the toilet[4,5]	3.0	3.0	3.0	3.3	0.5	0.0	16.8
Meal preparation[6]	21.0	17.3	19.9	34.3	8.7	15.6	61.3
Doing heavy housework such as washing windows, walls, or floors[4]	71.1	68.2	69.8	82.6	63.1	68.9	93.6
Doing light housework such as doing dishes, straightening up, or light cleaning[4]	34.0	31.1	34.0	42.4	21.2	27.6	78.1
Shopping for personal items such as medicines or toilet items[4]	53.7	44.7	54.7	77.3	43.5	48.1	90.2
Using the telephone[4]	5.4	4.6	4.4	10.2	1.9	3.1	18.7
Taking your medications[4]	7.1	4.8	7.9	11.9	3.3	2.5	27.7
Managing your money[7]	36.7	31.2	38.5	48.2	29.8	33.8	59.3

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question is in the form "Do you usually receive help from another person in . . . ?" and was asked of all participants.
[5] For each task, participants were asked if they received any help whether or not they reported difficulty with the task. In order to be classified as having ADL difficulty, receives help, a participant had to report both difficulty and receipt of help for the same ADL (at least one). Thus a small percentage of women who were not classified as receiving ADL help reported receiving help with some ADL tasks.
[6] Who has the main responsibility for preparing meals in your home? Does (a/any other) friend or relative come in to your home to help you prepare meals or bring you meals on a regular basis?
[7] Does another person usually help you with managing your money?

Table 7.4: Emotional Support: Presence and Type of Confidant and Perceived Adequacy of Support (Percent)[1,2]

Indicator of Emotional Support	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Is there any one special person you know that you feel very close and intimate with—someone you share confidences and feelings with, someone you feel you can depend on?[4]							
No	9.0	7.9	9.4	11 3	5.7	11.5	8.9
Yes	91.0	92.1	90.6	88.7	94.3	88.5	91.1
Who is this person?[5]							
Spouse	5.0	7.0	4.2	1.1	4.2	4.7	7.2
Child	28.9	29.8	27.4	30.3	27.9	28.6	32.0
Other relative	24.3	21.3	27.0	25.9	28.7	20.8	25.1
Friend/neighbor	30.8	32.7	29.6	28.2	32.3	32.1	23.8
Other	2.0	1.3	2.5	3.2	1.2	2.4	2.9
Could you have used more emotional support than you received in the last year?[4]							
No	68.1	63.7	70.1	75.4	73.2	69.0	54.6
Yes	32.0	36.3	29.9	24.6	26.8	31.0	45.4
Would you say you needed . . .?[5]							
A lot more	8.7	9.2	10.1	3.7	8.0	7.4	14.1
Some more	10.9	11.5	9.8	12.0	8.2	11.5	14.9
A little more	12.3	15.7	10.0	8.9	10.6	12.2	16.5

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.
[5] Categories may not add up to percent "Yes" above due to rounding.

8

Mental Health and General Well-Being

Judith D. Kasper, Eleanor M. Simonsick

Mental health is increasingly recognized as an important component of overall health status. One of the most widely used health status assessment instruments, the Short-Form 36 (Ware and Sherbourne, 1992), contains both physical and mental health scales in recognition of the key role of emotional health in overall well-being. Quality of life, while conceptually related to mental health, addresses broader issues of life circumstances and individuals' feelings about various aspects of their lives (McDowell and Newell, 1987). The inclusion of life quality as a health and medical outcome is increasingly common, in part as a result of the increased emphasis on patient and consumer perspectives on health and health care.

The Women's Health and Aging Study (WHAS) examines selected aspects of mental health and general well-being. These include depressive symptoms as measured by the Geriatric Depression Scale (GDS; Yesavage et al., 1983), life quality assessed with the Perceived Quality of Life Scale (PQOL; Patrick et al., 1988), anxiety, and personal mastery. All indicators were administered in the baseline interview and repeated every 6 months over the 3-year followup.

Depressive Symptoms

Depressive symptomatology is common, affecting 12 percent to 20 percent of elderly people residing in the community (Comstock and Helsing, 1976; Eaton and Kessler, 1981; Frerichs et al., 1981; Murrell et al., 1983); the very old have higher rates (Blazer et al., 1991; Gatz and Hurwicz, 1990). There is substantial evidence that depressive symptomatology is associated with poorer physical, social, and role functioning than physical illness alone (Wells et al., 1989). Depression is associated with increased risk of cardiovascular events (Booth-Kewley and Friedman, 1987; Carney et al., 1990) and has been found to predict poorer recovery from myocardial infarction (Stern et al., 1976, 1977), stroke (Feibel and Springer, 1982), hip fracture (Magaziner et al., 1990), and disability (Gurland et al., 1988). While depressive symptoms are typically considered indicative of poor health and physical decline (Cohen-Cole and Stoudemire, 1987; Rodin and Voshart, 1986), some studies suggest that depressive symptomatology and related psychosocial factors may precipitate decline (Aneshensel et al., 1984; Gurland et al., 1988).

Prevalence of depressive symptomatology can vary with the assessment approach (Newmann, 1989). Clinical diagnostic criteria may underestimate depression among elderly people, in contrast to symptom scales, which generally yield higher prevalence estimates (Gallo et al., 1994). In the WHAS, the GDS was selected to measure depressive symptoms because it is less complicated and more sensitive than other commonly used scales and has high sensitivity and specificity for identifying depression diagnosed according to both Research Diagnostic Criteria (Spitzer et al., 1978) and DSM-III criteria (American Psychiatric Association, 1980; Norris et al., 1987). In addition, it has been found to be a valid measure of depressive symptoms in persons with mild to moderate dementia (Feher et al., 1992). Only one item in the

scale is related to somatic symptoms, making it preferable for use with chronically ill and disabled persons like the women participating in the WHAS. The GDS takes 8 to 10 minutes to administer and consists of 30 items that require a yes or no response. Scores can range from 0 to 30, with higher scores indicating more depressive symptomatology. A score of 10 or below indicates no symptoms; scores of 14 or above indicate moderate to high levels of depressive symptomatology (Norris et al., 1987).

Table 8.1 presents the mean GDS score, percentage with at least mild depressive symptomatology, and the percentage with a moderate to high level of depressive symptoms for the total population, and for each age group and disability level. About one-third of these disabled older women exhibited some depressive symptomatology, but substantially fewer—17 percent—had a moderate to high level of symptoms. Prevalence of depressive symptoms declined with age. Among women age 65 to 74 years, 19 percent were in the moderate to high range, in contrast to 14 percent of women age 85 years and older. Prevalence of depressive symptoms was similar for women with moderate disability and those who reported difficulty with ADLs but did not receive help. It increased dramatically for the most severely disabled, however. Among moderately disabled women, 27 percent had at least mild symptomatology and 13 percent had a moderate to high level of symptoms. Among the most disabled women, the comparable estimates were 47 percent and 29 percent.

Quality of Life

The PQOL scale consists of 20 items and measures satisfaction with a broad range of life domains, including physical, psychological, and social. It incorporates areas of dysfunction included in the Sickness Impact Profile, a widely used and researched instrument (Bergner et al., 1981), and validation studies are ongoing (Danis et al., 1988; Norburn et al., 1987). For 19 of the items respondents indicate their level of satisfaction on a scale ranging from 0 (extremely dissatisfied) to 10 (extremely satisfied). For 1 item, respondents indicate their level of happiness from 0 (extremely unhappy) to 10 (extremely happy). The scale may be used as a simple summary of scores across the individual items or as a mean score of the items. Three subscales, which the developers have identified as measures of physical, social, and cognitive health (Patrick et al., 1988), may also be created. The items comprising these subscales are indicated in the footnotes to Table 8.3.

To simplify presentation of the data and to provide the distribution of both low and high levels of satisfaction, the 11-point scale was categorized as follows: dissatisfied (0-3), neutral (4-6), and satisfied (7-10). Table 8.2 presents the percentage dissatisfied, neutral, and satisfied for each item for the total population and by age group and disability level. Table 8.3 provides mean full scale and subscale scores and the percentage scoring in the low, medium, and high range of the scales.

Among these older disabled women, the highest rates of dissatisfaction were observed for amount of walking, physical health, and frequency of getting outside the house (Table 8.2). All of these items are related to health and functional status. Consistent with this trend, only 50 percent fell in the high satisfaction range of the physical health subscale, compared with over 75 percent for the cognitive and social health subscales (Table 8.3). Just under one-fifth of the WHAS population was dissatisfied with the way their income meets their needs. Between 10 and 15 percent reported dissatisfaction with ability to care for themselves, contributions to their community, their retirement, their recreation or leisure activities, their level of sexual activity, the amount of variety in their lives, and sleep habits. The percentage of women in the dissatisfied range on other items was 10 percent or less. On the global question concerning happiness, three-quarters of these women fell into the happy to very happy range.

Level of satisfaction varied by age on some individual items in the PQOL. For example, higher percentages of the oldest women, compared with the others, were satisfied with their physical health and amount of walking. A higher percentage of the youngest women, on the other hand, were dissatisfied with how well they care for themselves, and neutral or dissatisfied with the way their income meets their needs. On the subscales, age differences were small. Only on the cognitive health subscale did the percentage highly satisfied decline with age.

On almost every individual item there was a gradient from dissatisfied to satisfied by disability level, with moderately disabled women expressing the most satisfaction and severely disabled women the least. Among those receiving help with ADLs, 32 percent were dissatisfied with their physical health, 30 percent with how well they care for themselves, 36 percent with how often they get outside their home, and 27 percent with their contribution to the community. Comparable percentages for moderately disabled women ranged from a high of 18 percent to a low of 5 percent. The overall scale and the physical health and social health subscales also indicate a decrease in the percentage of women in the satisfied range with increasing disability. The cognitive health subscale showed only a slight trend by disability level, however.

Anxiety

Fear and anxiety may have a significant effect on functional status and disability. Fear of unfamiliar places and anxiety over leaving the home, for example, can have important implications for a host of practices known to affect function, such as engaging in physical activity and maintaining social interaction. One specific fear, related to falling, has been found to contribute to limitations in physical functioning (Tinetti et al., 1994) (see Chapter 13).

Only a few brief measures of anxiety are appropriate for use in population-based surveys of community-dwelling elderly. Four of the seven items in the anxiety subscale of the Hopkins Symptom Checklist (HSCL; Derogatis et al., 1974) were used to measure symptoms of anxiety in the WHAS. The HSCL and its subscales are widely used and well studied. The four anxiety items selected were chosen on the basis of their face validity. The three that were excluded are largely somatic. Respondents were asked, in the past week, how frequently (not at all, a little, quite a bit, and extremely) they felt nervous or shaky inside; had to avoid certain things, places, or activities because they frightened them; felt tense or keyed up; or felt fearful.

Table 8.4 presents the percentage distribution of responses to each of the anxiety symptoms for the total population and for the age and disability subgroups. The percentage with none, one, or two or more symptoms is also provided. Women expressing considerable anxiety (quite a bit or extreme frequency of symptoms in the past week) represented a small percentage of the overall population, ranging from a little over 10 percent who felt nervous or shaky inside or tense or keyed up, to 5 percent who felt fearful and 3 percent who avoided things, places, or activities out of fear. About one-fifth of these women experienced at least one symptom, however, and another fifth reported experiencing two or more symptoms. There were few differences by age on individual items or the percentage experiencing one or more symptoms. The most disabled women were more likely to report at least one symptom, about half compared with 37 percent of moderately disabled women. For the individual symptoms, among women receiving help in ADLs, about one-third reported feeling nervous or shaky inside, or tense or keyed up. About one-quarter of moderately disabled women reported these symptoms.

Personal Mastery

Sense of personal control over health outcomes has emerged as a potentially important factor in the maintenance of physical function (Rodin, 1986). To minimize respondent burden, only the two items most representative of the personal mastery dimension were selected from Pearlin

and Schooler's (1978) work on the structure of coping. The two items are "I can do just about anything I really set my mind to" and "I often feel helpless in dealing with the problems of life." For each item there are four response options, ranging from strongly agree to strongly disagree.

Table 8.5 lists the response distribution for each of the mastery items. In this population of disabled women, 46 percent agreed strongly that they can do what they set their minds to, and 37 percent disagreed strongly that they feel helpless in dealing with the problems of life. About 10 percent were at the opposite extreme, expressing helplessness. Women age 65 to 74 years were more likely to disagree strongly with feeling helpless in dealing with life than women age 85 years or older, one-third of whom agreed somewhat or strongly. Women with ADL difficulty who received help were more likely to express helplessness than others. Twenty percent agreed strongly that they often feel helpless in dealing with the problems of life, compared with 9 percent of moderately disabled women. Similarly, 16 and 6 percent, respectively, disagreed strongly with the statement that they could do anything they set their minds to.

Summary

Overall, the prevalence of mental health problems as indicated by depressive symptomatology was low. Quality of life indicators across physical, social, and cognitive domains also suggest high levels of satisfaction. The most severely disabled women exhibit the poorest mental health and lowest levels of satisfaction, particularly in areas related to physical capacity. On the whole, however, this population of community-resident disabled women exhibits relatively good mental health and expresses a high degree of general well-being.

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Table 8.1: Depressive Symptomatology: Geriatric Depression Scale Scores[1,2,3]

Geriatric Depression Scale	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[4] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Mean	8.0	8.1	7.9	7.9	7.1	8.0	9.9
Mild to high level of depressive symptomatology (≥10) (%)	31.8	34.7	29.5	29.4	27.2	29.8	46.8
Moderate to high level of depressive symptomatology (≥14) (%)	17.4	18.6	17.3	14.3	13.1	16.4	29.3

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Percents and means are based on weighted data.
[3] The Geriatric Depression Scale (GDS) consists of 30 items with a yes/no response format. Scores can range from 0 to 30, with high scores indicative of more depressive symptomatology Yesavage JA, Brink TL, Rose TL, et al (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *J Psychiatr Res* 17:37-49.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 8.2: Perceived Quality of Life: Level of Satisfaction for Scale Items (Percent)[1,2,3]

Level of Satisfaction[4]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[5] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
How satisfied are you with . . . ?							
1) Your physical health, that is, the health of your body							
Dissatisfied (0-3)	23.8	25.2	24.2	18.8	17.7	25.7	31.5
Neutral (4-6)	31.8	33.6	32.3	24.8	31.0	32.2	32.1
Satisfied (7-10)	44.4	41.2	43.5	56.4	51.4	42.1	36.4
2) How well you care for yourself, for example, preparing meals, bathing or shopping							
Dissatisfied (0-3)	12.0	10.1	12.9	15.1	5.2	10.7	29.5
Neutral (4-6)	17.6	17.3	15.8	23.5	11.9	18.8	26.3
Satisfied (7-10)	70.4	72.6	71.3	61.4	83.0	70.5	44.2
3) How well you think and remember							
Dissatisfied (0-3)	9.0	8.7	9.1	9.6	8.4	8.2	12.7
Neutral (4-6)	27.6	25.5	30.2	26.5	26.7	27.8	28.6
Satisfied (7-10)	63.4	65.8	60.7	64.0	64.8	64.0	58.8
4) The amount of walking you do							
Dissatisfied (0-3)	38.6	39.7	39.8	31.6	29.1	40.7	52.1
Neutral (4-6)	31.3	33.1	29.1	32.0	32.4	32.4	26.0
Satisfied (7-10)	30.1	27.2	31.0	36.4	38.5	26.9	21.9
5) How often you get outside the house, for example, going into town, using public transportation or driving							
Dissatisfied (0-3)	22.3	20.1	22.5	28.3	16.1	22.1	35.7
Neutral (4-6)	24.6	25.6	24.9	20.9	23.4	23.6	29.8
Satisfied (7-10)	53.1	54.3	52.7	50.8	60.5	54.3	34.5
6) How well you carry on a conversation, for example, speaking clearly, hearing others, or being understood							
Dissatisfied (0-3)	6.4	5.0	6.9	9.0	3.7	6.9	10.6
Neutral (4-6)	17.2	13.9	19.8	19.8	14.8	18.3	18.8
Satisfied (7-10)	76.5	81.1	73.3	71.2	81.5	74.8	70.7
7) The kind and amount of food you eat							
Dissatisfied (0-3)	6.5	7.9	5.3	6.0	5.5	6.3	9.3
Neutral (4-6)	17.2	16.3	19.6	13.4	14.7	18.6	18.5
Satisfied (7-10)	76.3	75.8	75.2	80.6	79.8	75.1	72.3
8) How often you see or talk to your family and friends							
Dissatisfied (0-3)	5.9	5.7	6.3	5.8	5.0	6.3	7.0
Neutral (4-6)	16.0	14.8	15.7	20.4	13.4	15.5	22.7
Satisfied (7-10)	78.1	79.6	78.0	73.8	81.6	78.3	70.3
9) The help you get from your family and friends, for example, helping in an emergency, fixing your house, or doing errands							
Dissatisfied (0-3)	7.9	6.9	9.1	7.7	5.6	9.1	9.4
Neutral (4-6)	12.1	13.4	9.8	14.1	10.8	11.6	15.8
Satisfied (7-10)	80.1	79.7	81.1	78.2	83.6	79.3	74.8
10) The help you give to your family and friends							
Dissatisfied (0-3)	8.6	5.9	10.5	11.3	2.6	9.9	17.3
Neutral (4-6)	18.3	16.5	19.4	20.7	13.4	19.0	26.5
Satisfied (7-10)	73.1	77.6	70.1	68.0	84.0	71.1	56.2

(Continued)

(Continued)

Level of Satisfaction[4]	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[5] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
11) Your contribution to your community, for example, a neighborhood, religious, political or other group							
Dissatisfied (0-3)	14.6	12.1	17.2	15.1	8.6	14.6	27.0
Neutral (4-6)	24.2	25.4	23.0	23.9	21.6	26.6	22.8
Satisfied (7-10)	61.2	62.6	59.8	61.0	69.8	58.7	50.2
12) Your retirement or current job							
Dissatisfied (0-3)	11.8	14.4	10.2	8.6	8.5	10.3	22.9
Neutral (4-6)	15.2	18.1	12.5	14.2	15.0	15.5	15.0
Satisfied (7-10)	73.0	67.5	77.3	77.2	76.5	74.2	62.1
13) The kind and amount of recreation or leisure you have							
Dissatisfied (0-3)	14.3	16.0	12.6	14.0	9.7	14.3	23.9
Neutral (4-6)	24.2	26.1	22.9	22.2	23.6	23.4	27.7
Satisfied (7-10)	61.5	57.9	64.6	63.8	66.7	62.3	48.5
14) Your level of sexual activity or lack of sexual activity							
Dissatisfied (0-3)	13.1	11.9	15.6	10.0	10.8	13.1	18.1
Neutral (4-6)	19.2	23.2	14.8	19.0	19.5	17.0	24.6
Satisfied (7-10)	67.7	64.9	69.6	71.0	69.8	69.9	57.3
15) The way your income meets your needs							
Dissatisfied (0-3)	17.9	23.0	15.2	10.4	14.1	18.1	25.2
Neutral (4-6)	19.9	20.3	20.9	16.0	22.7	18.2	18.6
Satisfied (7-10)	62.2	56.8	63.9	73.6	63.2	63.6	56.1
16) How respected you are by others							
Dissatisfied (0-3)	2.2	2.1	3.0	0.6	1.6	2.4	3.0
Neutral (4-6)	9.6	11.4	7.2	11.1	6.9	10.7	12.5
Satisfied (7-10)	88.2	86.5	89.9	88.3	91.5	87.0	84.5
17) The meaning and purpose of your life							
Dissatisfied (0-3)	7.9	8.7	7.2	7.0	5.7	7.9	12.1
Neutral (4-6)	16.1	14.9	16.9	17.4	14.6	17.3	15.8
Satisfied (7-10)	76.0	76.4	75.8	75.7	79.7	74.8	72.1
18) The amount of variety in your life							
Dissatisfied (0-3)	12.6	12.9	11.8	14.1	8.3	12.1	23.0
Neutral (4-6)	23.6	21.3	26.1	23.6	21.7	24.2	25.6
Satisfied (7-10)	63.8	65.9	62.1	62.3	70.0	63.6	51.4
19) The amount and kind of sleep you get							
Dissatisfied (0-3)	10.2	9.6	12.0	7.3	8.1	11.7	10.5
Neutral (4-6)	23.4	26.0	22.1	19.4	21.9	22.8	28.5
Satisfied (7-10)	66.4	64.4	65.9	73.3	70.0	65.5	61.0
20) Please tell me how happy you are							
Unhappy (0-3)	6.1	6.9	5.8	4.9	3.1	6.5	11.4
Neutral (4-6)	19.1	19.8	19.3	16.7	19.5	17.8	22.2
Happy (7-10)	74.8	73.4	74.9	78.3	77.3	75.8	66.4

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Consists of 20 questions on health and fundamental aspects of life. For 19 of the items, respondents indicate level of satisfaction from 0 (extremely dissatisfied) to 10 (very satisfied). For one item, respondents indicate their level of happiness from 0 (extremely unhappy) to 10 (very happy). Patrick DL, Danis M, Southerland LI, Hong G. (1988). Quality of life following intensive care. *J Int Med* 3:218-23.
[4] Categories for each item may not add up to 100% due to rounding.
[5] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 8.3: Perceived Quality of Life Scale and Subscale Scores[1,2]

Perceived Quality of Life Scale and Subscales[3]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[4] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Perceived quality of life scale[5]							
Mean scale score	7.3	7.3	7.3	7.4	7.6	7.3	6.6
Distribution of scale score (%)							
Low (0-3)	2.5	2.1	2.7	3.2	0.7	2.9	5.1
Medium (4-6)	25.2	24.6	25.5	26.3	18.8	25.0	39.2
High (7-10)	72.3	73.3	71.8	70.5	80.5	72.1	55.7
Cognitive health subscale[6]							
Mean subscale score	7.6	7.7	7.5	7.3	7.7	7.5	7.2
Distribution of subscale score (%)							
Low (0-3)	4.0	4.0	3.6	5.4	2.2	4.3	7.0
Medium (4-6)	20.3	17.3	21.9	24.7	20.8	19.5	21.5
High (7-10)	75.7	78.8	74.5	69.9	77.1	76.2	71.5
Physical health subscale[7]							
Mean subscale score	6.3	6.3	6.3	6.5	6.9	6.3	5.2
Distribution of subscale score (%)							
Low (0-3)	11.4	10.9	11.6	12.2	5.2	10.6	26.5
Medium (4-6)	38.9	39.4	39.8	34.6	33.9	40.6	44.2
High (7-10)	49.7	49.6	48.6	53.2	60.9	48.8	29.3
Social health subscale[8]							
Mean subscale score	7.6	7.5	7.6	7.8	7.9	7.6	7.0
Distribution of subscale score (%)							
Low (0-3)	2.4	1.9	3.0	2.2	1.0	2.2	5.6
Medium (4-6)	21.2	20.9	21.3	21.9	15.8	21.1	32.7
High (7-10)	76.4	77.2	75.8	75.9	83.2	76.7	61.7

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Percents and means are based on weighted data.
[3] Distribution of scores may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two more domains (see Chapter 1).
[5] Scale score is mean of items 1-20 in Table 8.2.
[6] Subscale score is mean of items 3 and 6 in Table 8.2.
[7] Subscale score is mean of items 1, 2, 4, 5, and 19 in Table 8.2.
[8] Subscale score is mean of items 8-18 and 20 in Table 8.2.

Table 8.4: Anxiety Symptoms (Percent)[1,2,3]

Anxiety Symptoms[4]	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[5] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
During the past week, have you . . . ?							
Felt nervous or shaky inside							
No	73.1	73.0	73.5	72.1	76.2	73.2	66.3
A little	15.7	17.0	15.0	14.0	13.5	17.0	16.7
Quite a bit	7.6	7.2	7.5	8.9	8.2	5.3	12.3
Extremely	3.6	2.8	4.0	5.1	2.1	4.4	4.7
Had to avoid certain things, places, or activities because they frighten you							
No	95.1	95.5	93.9	97.0	98.5	93.8	91.6
A little	2.3	2.5	2.2	1.5	1.5	1.9	4.9
Quite a bit	2.3	1.4	3.9	0.9	0.0	4.0	2.6
Extremely	0.3	0.5	0.0	0.6	0.0	0.4	0.9
Felt tense or keyed up							
No	74.4	70.5	77.6	77.3	76.0	75.9	67.1
A little	15.6	18.6	13.5	12.2	15.3	15.5	16.6
Quite a bit	7.7	9.3	6.6	6.1	7.2	6.8	11.3
Extremely	2.3	1.6	2.3	4.4	1.6	1.9	5.1
Felt fearful							
No	89.6	89.5	90.4	87.5	92.7	88.6	85.7
A little	5.8	5.0	6.3	6.8	5.7	5.1	8.1
Quite a bit	3.3	4.2	2.4	3.2	1.7	4.7	2.7
Extremely	1.3	1.3	0.9	2.5	0.0	1.5	3.5
Total symptoms[6]							
None	58.6	57.2	59.3	60.9	62.8	58.2	51.0
1	22.5	22.4	24.2	18.4	21.3	23.9	21.4
2 or more	18.9	20.5	16.5	20.6	15.9	18.0	27.6

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Items come from the anxiety subscale of the Hopkins Symptom Checklist. Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, Covi L. (1974). The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behavioral Science* 19:1-15.
[4] Categories for each item may not add up to 100% due to rounding.
[5] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[6] Total number of items for which participant reported experiencing the symptom at least "a little."

Table 8.5: Personal Mastery (Percent)[1,2,3]

Personal Mastery[4]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[5] (N=343)	ADL Difficulty	
						Receives No Help (N=478)	Receives Help (N=181)
I can do just about anything I really set my mind to.							
Disagree strongly	7.7	7.2	7.3	10.2	5.7	6.1	16.2
Disagree somewhat	19.5	15.1	23.8	20.7	16.6	19.9	24.3
Agree somewhat	26.3	29.2	23.8	24.7	26.4	28.8	19.3
Agree strongly	46.5	48.6	45.1	44.4	51.4	45.2	40.2
I often feel helpless in dealing with the problems of life.							
Disagree strongly	37.4	40.4	37.6	28.1	42.3	39.5	21.4
Disagree somewhat	33.1	34.5	30.6	35.5	32.4	34.1	31.6
Agree somewhat	19.6	16.3	21.6	24.0	16.1	19.6	27.0
Agree strongly	9.9	8.8	10.3	12.3	9.3	6.8	20.0

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Adapted from: Pearlin LI, Schooler C. (1978). The structure of coping. *J Health Soc Behav* 18:2-21.
[4] Categories for each item may not add up to 100% due to rounding.
[5] No ADL difficulty; disabled in two or more domains (see Chapter 1).

9

Cardiovascular Diseases and Diabetes

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Cardiovascular disease (CVD) and, in particular, coronary heart disease (CHD) remain the leading causes of death in men and women 65 years and older, despite the decline in absolute mortality rates that has been seen in both sexes since 1968 (Feinleib and Gillum, 1986). In women, the prevalence of CHD morbidity has increased, in part as a result of reduced case fatality rates and in part as a result of longer life expectancy (Nickel and Chirikos, 1990). Consequently, women surviving a heart attack may live with the symptoms and functional consequences of their heart disease for many more years. In 1991, more than half of the yearly health care costs related to CVD were for women (Eaker et al., 1993).

Heart disease is also one of the leading causes of disability in women (German and Fried, 1989). In a recent study that asked older participants to assess the condition causing their disability (Ettinger et al., 1994), heart disease ranked second. Its main impact was in the mobility and exercise tolerance domains (Fried et al., 1994), such as walking, climbing stairs, or doing heavy housework. Estimates of the percentage of women with CHD who are disabled by their illness range from 47 percent in women age 65 to 74 years to 55 percent in women age 75 years and older (Soldo and Manton, 1985).

Diabetes mellitus, the sixth leading cause of death among those age 65 and older, affects approximately 10 percent of older women and is an important cause of morbidity and premature mortality (National Diabetes Data Group, 1985). Diabetic patients, especially those in poor metabolic control, are susceptible to a series of long-term micro- and macrovascular complications that can affect every aspect of physical function (Nathan, 1993). Data from the National Health Interview Survey indicate a twofold higher likelihood of self-reported physical limitations in diagnosed diabetics compared with the general U.S. population (Drury, 1985).

As people get older, ascertaining their clinical symptoms does not fully identify the impact of a disease on physical function. Older persons may underreport symptoms related to CVD because they curtail their physical activity to avoid the onset of symptoms or because their physical function is already impaired by other comorbid conditions. In addition, asymptomatic events such as silent myocardial infarctions (Mittelmark et al., 1993) and atypical symptoms (Bayer et al., 1986) are common in older people. Finally, the reporting of symptoms or conditions can be influenced by social, psychological, and cognitive factors (Kukull et al., 1994).

Noninvasive, objective measures of clinical or subclinical disease are therefore vital in estimating the prevalence of cardiovascular diseases in an older population and in fully evaluating the impact of these conditions on physical function (Bild et al., 1993; Kuller et al., 1994). This chapter describes (1) the prevalence of cardiovascular diseases in disabled older women according to both objective examination and self-report of conditions and symptoms and (2) the association of these measures with age and level of disability.

Self-Reported Cardiovascular Conditions and Diabetes

A trained interviewer asked participants whether they were ever told by a doctor that they had angina or chest pain due to heart disease, heart attack or myocardial infarction, congestive heart failure, high blood pressure, rheumatic heart or valvular heart disease, lower extremity arterial disease, or diabetes. The women were also asked whether they had ever had coronary artery bypass surgery or surgery on the arteries of the legs (Table 9.1).

When the total prevalence rates of CVD conditions in the study population (Table 9.1) are compared with prevalence rates in the ineligible population (Chapter 1, Table 1.3), the association between CVD conditions and disability status is evident. The prevalence of these conditions in the study population is two to three times higher than in the ineligible population (Table 1.3).

In the study population, about one in five women reported a history of angina, myocardial infarction, and diabetes, and nearly 60 percent reported high blood pressure (Table 9.1). The proportion of those who reported high blood pressure, diabetes, and heart valve problems tended to decrease with age, with the lowest rates occurring, in general, in participants age 85 years and older. This may be related to selective survival of women without these conditions. Rates of coronary artery bypass surgery also tended to be higher in women age 65 to 74 years than in the oldest old (Table 9.1). Reported rates of congestive heart failure and diabetes were greatest in those receiving help with activities of daily living (ADLs). Rates of coronary artery bypass surgery decreased with increasing severity of disability, from 5.5 percent in women with moderate disability to 0.7 percent in women who received help with ADLs (Table 9.1). This relationship was not seen for lower extremity arterial surgery.

Cardiovascular Disease Symptoms

The presence of cardiovascular symptoms, shown in Table 9.2, was determined by the answers to a series of questions. Chest pain was defined as nonexertional if the participant reported any pain or discomfort in her chest and did not report the pain when walking, or did not walk at all. Exertional chest pain was defined as pain or discomfort in the chest that was reported when walking on level ground and/or when walking uphill or hurrying, utilizing the standardized questions from the Rose Questionnaire (Rose, 1962). Orthopnea was assessed by asking the respondent whether she became short of breath at night sleeping flat or on only one pillow. Paroxysmal nocturnal dyspnea was determined by asking the participant whether she woke up at night gasping for breath. Intermittent claudication was ascertained with the Rose Questionnaire (Rose, 1962) and was defined as being present if the participant reported all of the following symptoms: pain in either leg when walking, the localization of the pain in her calf or calves, and the relief of this pain when walking stopped. Ankle swelling was considered present if the respondent reported foot or ankle swelling that developed or worsened during the day and decreased at night.

Clinical symptoms related to cardiovascular diseases tended to be less prevalent among women 85 years and older compared to younger women (Table 9.2), possibly because of selective survival of those without these problems. Interesting patterns of symptoms were seen in relation to level of disability. With increasing severity of disability there was a decrease in exertional chest pain, little difference in intermittent claudication, and a substantial increase in orthopnea or paroxysmal nocturnal dyspnea. The higher rates of exertional chest pain in the least disabled subgroup are probably a result of the fact that less disabled people are more likely to undertake activities that can trigger exercise-related clinical symptoms.

Clinical Signs and Measures of Cardiovascular Disease

Clinical signs and cardiovascular disease measures were assessed by a trained nurse during the physical examination performed in the participant's home, according to standardized protocols (Table 9.3). The presence of pulmonary rales (defined as bilateral rales that were audible with the stethoscope and did not clear with coughing) increased from 4.1 percent in women age 65 to 74 years to 13.3 percent in those age 85 years and older. Heart sounds were auscultated in a sitting position at Erb's point. Systolic and diastolic murmurs were defined as absent, present, or unknown. Almost one-third (28.9 percent) of women had an audible systolic murmur, a finding that was more common in women age 85 years and older (37 percent).

The prevalence of ankle edema, identified on examination using local pressure on the tibia (Table 9.3), differed from self-reported ankle edema, assessed by history of ankle swelling (Table 9.2). Most notably, ankle edema on exam increased with age, while self-reported ankle swelling decreased with age. Those age 65 to 74 years reported more ankle swelling than was found on exam, while those 85 years and older reported less swelling than was found on exam. A marked increase in ankle edema was observed with increasing level of disability (Table 9.3).

Blood pressure was measured in a semi-recumbent position with the use of a mercury sphygmomanometer and a cuff of appropriate size on the right arm, following the protocol of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (1988). The average of three measurements of the systolic (SBP) and diastolic blood pressure (DBP, recorded at the fifth Korotkoff sound) was used to classify participants into blood pressure categories. The categories were defined, according to the protocol (Joint National Committee, 1988), as follows: normotensive, DBP less than 90 mmHg and SBP less than 140 mmHg; borderline isolated systolic hypertension, DBP of less than 90 mmHg and SBP of 140 to 159 mmHg; isolated systolic hypertension, DBP of less than 90 mmHg and SBP of at least 160 mmHg; diastolic hypertension, DBP of at least 90 mmHg with any systolic blood pressure.

To assess the ankle-arm blood pressure index (AABPI), a standard mercury manometer was used to measure, in rapid succession, the SBP in the right arm and both legs with the subject in a semi-recumbent position. The SBP in the right and left posterior tibial arteries was measured twice using a standard arm blood pressure cuff applied just above the malleoli and an 8-Mhz Doppler stethoscope (Parks Model 841-A). To calculate the AABPI the higher of two SBPs in the left posterior tibial artery was averaged with the higher of two SBPs in the right posterior tibial artery, and the result was divided by the higher of two right brachial artery SBPs, also measured with the Doppler stethoscope (Newman et al., 1993). The ratio was categorized in five groups: less than 0.8, 0.8 to less than 0.9, 0.9 to less than 1.0, 1.0 to 1.5, and greater than 1.5 (Newman et al., 1993).

Blood pressure measurement revealed that the percentage of women with normal blood pressure decreased with increasing age, a result of an increase in the proportion of women with isolated systolic hypertension at older ages (Table 9.3). In contrast to these findings, self-report of high blood pressure (Table 9.1) was less common in women age 85 years and older. More aggressive pharmacologic treatment of high blood pressure in younger women could explain these findings. As severity of disability increased, the percentage of women who were normotensive decreased, a result of modest increases in all three categories of hypertension.

Approximately 12.5 percent of women had an AABPI less than 0.8. This finding was more common in the oldest women (17.5 percent) and in those receiving help in ADLs (14.9 percent). Exercise-induced symptoms, suggestive of in-

termittent claudication (Table 9.2), were compared with the actual measurement of the AABPI, which allows for a more objective evaluation for the presence of peripheral vascular disease (Table 9.3). Older women reported a lower prevalence of peripheral vascular disease symptoms than the younger participants (Table 9.2), but the proportion of women with an AABPI less than 0.8 was, in fact, higher among women 85 years and older (Table 9.3). In addition, the proportion of women in whom values of AABPI could not be obtained increased with age and disability level. These findings suggest that the prevalence of peripheral arteriopathy is likely to be underestimated in older persons with reduced mobility when the diagnosis relies on symptoms only.

Electrocardiographic Results

Twelve-lead electrocardiograms (ECGs) were recorded using the MAC PC-DT ECG Recorder (Marquette Electronics Inc., Milwaukee, WI). ECGs were stored electronically and transmitted to a centralized reading center (Epicare) for classification of electrocardiographic abnormalities using the NOVACODE measurement and classification system (Rautaharju et al., 1990).

Exclusion Criteria

Participants with artificial pacemakers (N = 15, 1.1 percent), with missing information on pacemakers (N = 5 , 0.5 percent), and with inadequate quality or no ECG data (N = 29, 2.9 percent) were excluded from this analysis, leaving a total of 953 participants (95 percent) with valid ECG data (Table 9.4). In subjects with major ventricular conduction defects, coding was not done for major Q/QS waves, left ventricular hypertrophy and ST-T wave abnormalities. Similarly, left ventricular hypertrophy and major Q/QS waves precluded coding of ST-T wave abnormalities, and atrial fibrillation or flutter precluded coding of first-degree atrioventricular block.

Classification

Major ECG abnormalities were classified as follows, according to the Minnesota code (Blackburn et al., 1960):

1. Major Q/QS waves (codes 1-1, 1-2 except 1-2-8)
2. Left ventricular hypertrophy (high amplitude R waves with major or minor ST-T abnormalities, codes 3-1, 3-3 with 4-1 to 4-3, or 5-1 to 5-3)
3. Isolated major ST-T wave abnormalities (codes 4-1, 4-2, 5-1, 5-2 without 3-1, 3-3, 1-1 to 1-3)
4. Atrial fibrillation or atrial flutter (code 8-3)
5. First-degree atrioventricular block (code 6-3)
6. Ventricular conduction defects: left bundle branch block (code 7-1); right bundle branch block (code 7-2); intraventricular block of indeterminate type with QRS interval $\geq$ 120 ms (code 7-4)

Electrocardiographic Findings and Abnormalities

A heart rate less than or equal to 60 was recorded in 18.8 percent of the participants. A heart rate greater than 90 was present in 6.0 percent of the entire population and tended to be more prevalent in women age 65 to 74 years (8.8 percent) and in those receiving help with ADLs (10.4 percent).

Major electrocardiographic abnormalities were common in this cohort of disabled women. Almost one-third (29.2 percent) of the participants had at least one of the six major abnormalities. The prevalence of major Q/QS waves and ventricular conduction defects tended to increase, in general, with age and level of disability, a trend also noted for the presence of any of the six major abnormalities. The prevalence of atrial fibrillation or flutter and left ventricular hypertrophy clearly increased with increasing age, while no consistent association was observed with level of disability. The prevalence of first-

degree atrioventricular block in the oldest old (8.9 percent) and in those receiving help with ADLs (10.8 percent) was approximately double the prevalence in those age 65 to 74 years (4.8 percent) and in those with moderate disability (5.1 percent).

Summary

These findings reinforce the importance of combining clinical findings and physical assessment to ascertain the presence of diseases in population studies of older persons. In an older and disabled population, this approach is essential not only to validate the presence of the disease, but is potentially important in clarifying the trajectory between preclinical disease, clinical disease, impairment, and disability.

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Table 9.1: Percent Prevalence of Self-Reported Cardiovascular Conditions and Events[1,2]

Condition	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Angina[4]	20.5	20.1	22.3	17.1	20.9	21.8	16.3
Heart attack or myocardial infarction[4]	20.3	16.2	25.1	19.6	23.8	17.9	20.0
Congestive heart failure[4]	8.9	8.0	10.4	7.2	8.9	6.9	14.3
Coronary artery bypass surgery[5]	3.5	4.0	3.9	1.3	5.5	3.2	0.7
Lower extremity arterial disease[6]	6.7	7.1	6.7	5.2	7.5	6.4	5.7
Surgery on leg arteries[7]	5.0	5.9	4.2	4.6	4.8	4.9	5.9
High blood pressure[4]	58.7	62.5	56.9	52.7	57.4	58.9	61.1
Diabetes[4]	20.5	23.7	21.7	7.8	19.1	16.0	35.8
Rheumatic heart or heart valve problems[8]	8.9	8.2	11.3	4.6	9.6	9.8	5.2

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The screener question is in the form "Has a doctor ever told you that you had (a) . . . ?" The presence of the condition was confirmed in the baseline interview.
[5] Have you ever had coronary artery bypass surgery?
[6] Has a doctor ever told you that you had intermittent claudication or pain in your legs from blockage of the arteries (peripheral vascular disease or atherosclerosis)?
[7] Have you ever had surgery on the arteries in your legs?
[8] The question is in the form "Has a doctor ever told you that you had . . . ?"

Table 9.2: Percent Prevalence of Cardiovascular Symptoms[1,2]

Symptom	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Chest pain[4]							
Nonexertional[5]							
Pain reported but does not walk[6]	1.5	1.2	1.6	2.2	0.0	0.7	7.0
Not precipitated by walking[7]	24.6	27.8	24.2	16.5	25.0	26.3	19.1
Exertional							
Walking uphill or hurrying only	8.5	10.0	9.2	2.6	11.5	8.4	3.0
Walking on level[8]	7.8	8.7	7.9	5.0	7.0	7.9	9.1
Orthopnea or paroxysmal nocturnal dyspnea[9]	24.7	26.5	25.1	18.2	19.1	25.4	34.1
Intermittent claudication[10]							
Yes	13.6	14.3	14.8	8.6	13.1	13.1	16.2
Does not walk[11]	4.4	4.2	4.4	4.9	0.8	1.8	19.0
Ankle swelling[12]	48.5	52.8	46.3	41.6	42.6	52.3	50.1

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] "Yes" response to "Have you ever had any pain or discomfort in your chest?"
[5] Whether chest pain was classified as exertional or nonexertional was determined by two questions: (1) Do you get this pain or discomfort when you walk uphill or hurry? (2) Do you get it when you walk at an ordinary pace on the level?
[6] "Cannot walk" response to "When you walk, do you use a cane?" OR "Doesn't walk" response to question about pain when walking uphill or hurrying.
[7] Pain not precipitated when walking uphill or hurrying or by walking on the level.
[8] Pain reported when walking on the level AND "Yes" or "Doesn't walk uphill or hurry" response to question about pain when walking uphill or hurrying.
[9] "Yes" response to either of the following: (1) Do you get short of breath at night if you sleep flat or on only one pillow? (2) Do you wake up at night gasping for breath?
[10] "Yes" responses to all of the following questions: (1) Do you get pain in either leg when you walk? (2) Do you get this pain in your calf or calves? (3) If you stand still is the pain relieved?
[11] "Doesn't walk" response to "Do you get pain in either leg when you walk?"
[12] "Yes" responses to both: (1) Have you ever had swelling of your feet or ankles? (2) Did the swelling tend to come on during the day and go down at night?

Table 9.3: Percent Prevalence of Clinical Signs and Distribution of Cardiovascular Measures[1]

Exam Finding	Total (N = 1002)	Age Level			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[2] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Pulmonary rales[3]	6.0	4.1	5.4	13.3	6.5	5.8	5.7
Heart murmurs[3]							
Systolic	28.9	24.9	30.2	37.0	31.2	26.6	30.5
Diastolic	13.5	11.6	14.0	17.7	14.0	14.2	10.6
Systolic and diastolic	4.7	3.4	5.4	6.7	4.9	4.3	5.6
Uninterpretable[4]	3.6	2.6	4.0	5.4	1.9	3.8	6.4
Bilateral ankle edema[3]	32.7	23.0	35.5	53.8	25.7	33.5	45.2
Blood pressure[3,5,6]							
Normotensive[7]	52.4	56.3	52.0	41.9	58.0	49.6	48.6
Borderline isolated systolic hypertension[8]	26.5	26.4	25.9	28.1	23.4	28.3	27.9
Isolated systolic hypertension[9]	16.2	10.7	18.8	25.2	14.9	16.5	18.1
Diastolic hypertension[10]	5.0	6.6	3.3	4.8	3.8	5.7	5.4
Ankle-arm blood pressure index[5,11]							
Less than .8	12.5	10.6	12.6	17.5	13.6	10.8	14.9
.8 to less than .9	7.9	6.6	8.0	11.6	9.1	7.0	8.2
.9 to less than 1.0	11.4	11.4	11.7	10.3	10.4	13.4	7.9
1.0 to less than 1.5	61.5	67.9	59.1	49.2	62.4	62.9	55.5
1.5 and over	0.7	0.5	0.6	1.3	0.3	1.1	0.0
Not obtainable	6.1	3.0	7.9	10.2	4.2	4.8	13.4

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[3] These variables have less than 1% missing data. Results are based on non-missing data.
[4] Systolic or diastolic murmur classified as "None" and other given as "Don't know" or "Not ascertained;" or systolic and diastolic murmur both classified as "Don't know."
[5] Categories may not add up to 100% due to rounding.
[6] Semi-recumbent auscultatory blood pressure (BP).
[7] Diastolic BP less than 90 mmHg and systolic BP less than 140 mmHg.
[8] Diastolic BP less than 90 mmHg and systolic BP at least 140 mmHg and less than 160 mmHg.
[9] Diastolic BP less than 90 mmHg and systolic BP at least 160 mmHg.
[10] Diastolic BP at least 90 mmHg.
[11] Mean of the higher of two left and right posterior tibial semi-recumbent systolic BP's divided by the higher of two right brachial semi-recumbent systolic BP's.

Table 9.4: Electrocardiographic Results[1,2]

	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Number with valid ECG[4]	953	370	299	284	327	454	172
Percent with valid ECG[4]	95.5	95.5	96.2	93.8	95.5	95.1	96.6
Heart rate (beats per minute)[5]							
60 or less (%)	18.8	18.5	20.5	14.5	19.3	20.1	13.9
61-90 (%)	75.2	72.7	75.1	83.1	75.2	75.1	75.7
Over 90 (%)	6.0	8.8	4.4	2.4	5.5	4.8	10.4
Mean heart rate	71.4	72.5	70.6	70.5	70.9	70.7	74.4
Electrocardiographic abnormalities (%)[6]							
Major Q/QS waves[7]	8.3	7.6	8.7	9.4	6.3	9.0	10.4
Left ventricular hypertrophy[7]	1.2	0.5	1.1	3.5	1.0	1.5	0.9
Isolated major ST-T wave abnormalities[7]	0.6	0.3	0.9	0.8	0.4	0.7	0.9
Atrial fibrillation or flutter	4.2	3.3	4.4	6.7	5.2	2.7	6.5
First-degree atrioventricular block[8]	7.3	4.8	9.3	8.9	5.1	7.6	10.8
Ventricular conduction defects[9]	11.8	8.7	13.9	15.4	9.5	13.1	12.9
Left bundle branch block	2.2	1.6	2.7	2.8	2.1	2.2	2.6
Right bundle branch block	4.6	2.6	5.7	7.8	2.3	6.1	5.6
Intraventricular block of indeterminate type	4.9	4.4	5.5	4.9	5.1	4.8	4.8
Any electrocardiographic abnormality above	29.2	22.6	33.1	38.2	23.0	31.0	37.2

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data for participants with valid ECG. Results are for participants with valid ECG and are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Participants with electronic pacemakers were not included.
[5] Categories may not add up to 100% due to rounding.
[6] See text for definitions of ECG abnormalities.
[7] Diagnosis not applied to participants with ventricular conduction defects.
[8] Diagnosis not applied to participants with atrial fibrillation or flutter.
[9] Categories may not add up to the percent with ventricular conduction defects due to rounding.

10

Exercise Tolerance and Body Composition

Eleanor M. Simonsick, Linda P. Fried

Cardiorespiratory fitness, commonly referred to as exercise tolerance, declines with increasing age, typically beginning in the third decade. This decline has been attributed to disease processes, disuse, and aging (Bortz, 1982; Fries and Crapo, 1981). A minimum level of exercise tolerance is necessary to perform many tasks that are important to independent functioning. Low-level cardiorespiratory fitness is a major cause of functional difficulties in old age (Bruce, 1985); it is estimated that basic self-care tasks can use as much as 90 percent of the exercise capacity of a sedentary older adult (Blessey, 1986).

Body weight and body composition also have important implications for physical functioning of older persons. Both high and low weight have been associated with functional difficulties and disability in old age (Ensrud et al., 1994; Galanos et al., 1994; Harris et al., 1989; Launer et al., 1994; Pinsky et al., 1985). Heavy weight is also a major risk factor for several diseases and conditions, including diabetes mellitus and coronary artery disease, which in themselves can affect function. Excess body weight can also exacerbate symptoms associated with particular conditions, for example, osteoarthritis of the knee (Ettinger et al., 1994). Low weight, particularly when it results from weight loss in old age, can be indicative of poor or declining health and is a risk factor for mortality (Fischer and Johnson, 1990).

This chapter presents data on exercise tolerance and body composition in disabled older women participating in the Women's Health and Aging Study (WHAS).

Exercise Tolerance

Exercise tolerance was estimated using two different approaches: (1) a questionnaire-based assessment derived from the Specific Activity Scale developed by Goldman et al. (1981) and (2) direct measurement using the seated step test developed by Smith and Gilligan (1983), administered by a nurse in the participant's home.

The Specific Activity Scale used in the WHAS was modified to improve its applicability to older disabled women. A few of the very demanding activities were excluded and some low-level activities were added. The modified scale consists of 18 activities organized into six groups according to the estimated metabolic equivalents (METs) required to perform the activity. (One MET is equal to 3.5 milliliters of oxygen consumed per kilogram of body weight per minute, the average value for oxygen consumption at rest). The following groups of activities describe exercise tolerance from lowest to highest: level 1 (< 2 METs): sit quietly in a chair; level 2 (2 to 2.3 METs): dress, iron, stand for 2 hours, play cards; level 3 (3 to 5 METs): strip and make a bed, mop floors, handwash clothes, walk 2.5 mph, bowl; level 4 (4.5 to 5.2 METs): walk down a flight of stairs; level 5 (5 to 6 METs): carry a light parcel up stairs, garden, dance a fox trot, walk 4 mph; and level 6 (7 to 9 METs): carry 24 lbs. up 8 steps, shovel snow or spade soil, walk 5 mph or jog.

To determine exercise tolerance, participants were asked if they could do the first task in a

group, regardless of any symptoms they experienced while doing the task. If they could not do the first activity in a group, they were asked if they could do the second activity and so on. If participants stated they could do any task in a group, they were classified as able to perform activities at the MET level the group represents. If they could not do any activity in a group they were classified as having exercise tolerance below that level. The exercise tolerance score is the highest activity level from 1 to 6 that the participant could perform regardless of symptoms. The pattern of questioning allows participants to skip over activities in a group that they do not or cannot do for reasons unrelated to cardiorespiratory fitness. To achieve a particular score, the participant need only report that she could do any one of the activities in a group.

Table 10.1 gives the exercise tolerance level of study participants as measured by the modified Specific Activity Scale. Sixty-six percent of the population had an exercise tolerance level between 3 and 6 METs (score of 3 to 5), indicating adequate cardiorespiratory fitness to perform activities equivalent to walking at least 2.5 miles per hour (normal walking pace) on level ground. Twenty-three percent had higher and 11 percent had lower levels of exercise tolerance. This 11 percent had barely adequate fitness to bathe (2.5 to 3.5 METs) and dress (2.4 to 4.0 METs) (Blessey, 1986).

Exercise tolerance level declined with increasing age and increasing severity of disability. Sixty-three percent of participants age 65 to 74 years could perform activities requiring 5 METs, compared with 57 percent of those 75 to 84 years and only 40 percent of women 85 years and older. The proportion of women with extremely low exercise tolerance among those age 85 years and older (19 percent) was more than twice that found in the youngest participants (8 percent). The disparity in fitness level across groups was even greater by disability level. While 71 percent of the moderately disabled and 56 percent of those with difficulty in activities of daily living (ADLs) who did not receive help could perform activities requiring 5 METs, only 26 percent of women who required help with ADLs had this level of exercise tolerance. Similarly, while 3 and 8 percent of the less severely disabled had extremely low exercise tolerance (score 1 or 2), 41 percent of women who required help in ADLs had extremely low fitness capacity.

For many tasks, particularly those in which speed is not a factor, the level of effort expended can vary tremendously across individuals. The Specific Activity Scale therefore represents only a crude approximation of fitness level. Objective measurement of exercise tolerance, that is, observed performance of standardized exertional tasks with known energy requirements, may be a more accurate assessment of fitness. For this reason, a graded exercise test was included in the nurse's baseline examination. Because of the low functional level and poor health status of a substantial proportion of the study population, a low-level graded exercise step test, performed in a seated position (Smith and Gilligan, 1983), was selected.

The seated step test is a four-stage, graded low-level test of exercise tolerance developed specifically for use in older adults (Smith and Gilligan, 1983). Stage 1 of the test goes to 2.3 METs, and stages 2, 3, and 4 go to 2.9, 3.5, and 3.9 METs, respectively. For comparison, 3.5 METs of energy expenditure is equivalent to walking 3.5 miles per hour, a fairly brisk pace. The test begins with the subject seated in a straight-backed chair with both feet flat on the floor. A step is placed in front of the subject such that when the leg is extended, the heel can reach the top of the step and the ankle is even with the edge. A metronome, set for 1 second beats, is used to keep time. On the first beat, the subject touches the front edge of the step with the arch of one foot, on the second she returns her foot to the floor, alternating feet. To ensure the safety of study participants, American College of Sports Medicine (ACSM) guidelines for exercise testing of older adults (ACSM, 1991) were used to establish (1) exclusion criteria for participation in the seated step test and (2) stopping criteria for per-

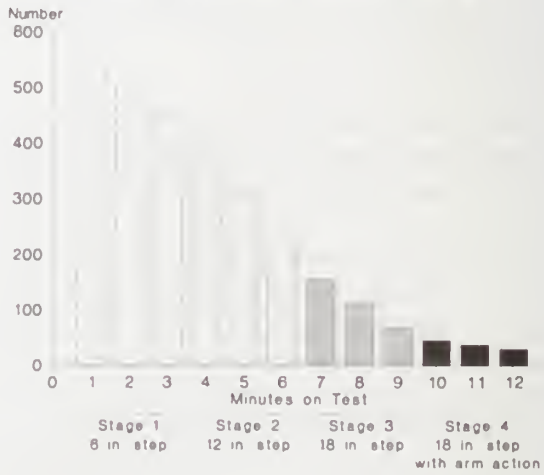
sons who started the test. During testing, the participant wore an ambulatory electrocardiograph cabled to a notebook computer from which a rhythm strip was run during each stage, an oximeter finger probe that displayed pulse rate and oxygen saturation, and a blood pressure cuff. The Borg Perceived Exertion Scale (Borg and Linderholm, 1974) was used to ascertain how hard the participant felt she was working.

Each stage lasts 3 minutes. Stage 1 of the test uses a 6-inch step. After 2 minutes (beginning at 1 minute 45 seconds), heart rate and oxygen saturation were recorded, a 30-second rhythm strip was run, blood pressure was checked, the Borg scale was presented, and stopping criteria were evaluated. If no stopping criteria were reached and the participant was willing, the test continued for another minute. After 3 minutes, the nurse stopped and cleared the stopwatch, and again recorded Borg perceived exertion, heart rate, and oxygen saturation. If no stopping criteria were reached and the participant was willing, the test continued on to stage 2, using a 12-inch step. The participant was instructed to keep stepping between stages. The procedures for each stage are identical. Stages 3 and 4 use an 18-inch step, and stage 4 adds arm movement. Whenever stopping criteria were reached, the nurse took a blood pressure; ran a rhythm strip; and recorded heart rate, oxygen saturation, Borg perceived exertion, the presence of any signs and symptoms, and the stage at which the test was terminated.

Table 10.2 lists the exclusion criteria for the seated step test and the number and percentage of participants meeting each criterion. The most common reasons for exclusion included loud systolic murmur detected in the nurse examination; electrocardiogram (ECG) abnormalities, particularly wide QRS and atrial fibrillation; severe leg weakness as determined by the nurse; elevated blood pressure; and angina. The majority of the women who were excluded met only one of the exclusion criteria. A total of 442 participants (44.1 percent) met one or more exclusions; an additional 23 (2.3 percent) did not feel they could do the test. The rate of exclusion increased stepwise with increasing age from 34 percent of women age 65 to 74 years to over 55 percent of participants age 85 years and older. The rate of exclusion varied by disability level as well; about 40 percent of the moderately disabled and those with ADL difficulty who received no help and nearly 62 percent of the most severely disabled were excluded from the seated step test.

Figure 10.1 shows the number of women who completed each stage of the seated step test in 1-minute intervals. When a participant failed to complete the first 2 minutes of a stage, it was assumed she completed 1 minute. A total of 537 of the 1,002 participants (53.6 percent) attempted the test; only 33 were able to complete the entire test. The likelihood of stopping was about the same during a stage as between stages. Forty-five percent of the total study population (84 percent of those who started the test) completed the first stage, which had an estimated MET value of 2.3; 24 percent (44 percent of those who started) completed the second stage with an estimated

Figure 10.1: Number of Women Completing Each Stage of the Seated Step Test in 1-Minute Intervals[1]



(Women's Health and Aging Study, physical assessment, 1992-1995)

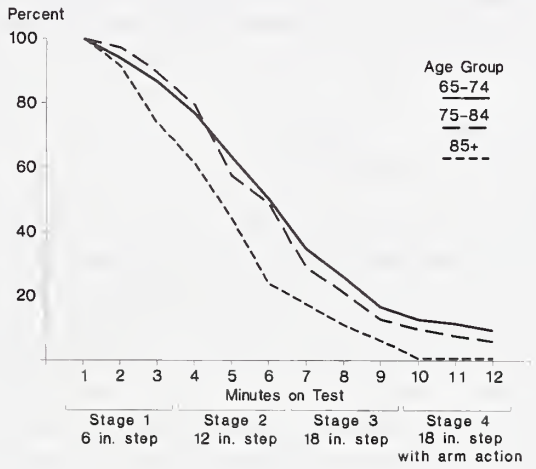
[1]If a participant started a stage but did not complete 2 minutes, she was assumed to have completed 1 minute. 537 women started the test and completed the first minute.

MET value of 2.9; 7 percent (13 percent of those who started) completed the third stage with an estimated MET value of 3.5; and 3 percent (6 percent of those who started) completed the fourth stage with an estimated MET level of 3.9. The highest drop-out rates occurred during the second stage and between the second and third stages.

Table 10.3 lists the reasons for stopping the test. Five hundred and four participants, 94 percent of those who started, stopped the seated step test before the end of the fourth stage. The two most frequent reasons for stopping, accounting for 70 percent of those who stopped, were related to participant reports of discomfort; 42 percent felt they could not continue and 28 percent perceived their exertion level to be 8 or greater. An additional 4 percent experienced shortness of breath. Very few participants met any of the clinical or objective stopping criteria. Less than 10 percent had an elevated heart rate, less than 3 percent had an elevated blood pressure, and less than 2 percent had abnormal ECG readings. Only one person (0.2 percent) with an abnormal ECG showed ST depression exceeding 1 millimeter, which resolved with cessation of exercise.

Figures 10.2 and 10.3 display the performance of participants who attempted the seated step test by age group and disability level, respectively. Participants age 65 to 74 and 75 to 84 years exhibited nearly identical patterns of test performance. Participants age 85 years and older stopped the test sooner and only one attempted (but did not complete) the fourth stage. Similar patterns of exercise performance were observed for disability level. The moderately disabled and women with ADL difficulty who received no help showed nearly identical test results; the most severely disabled group, women who received help with ADLs, exhibited much poorer performance on the seated step test. The most disabled women tended to stop the test sooner than the less disabled women; 61 percent completed the first stage and 13 percent completed the second

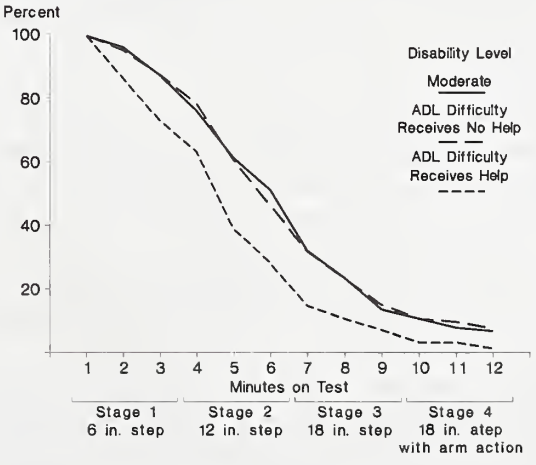
Figure 10.2: Among Persons Attempting Test, Percent Completing Each Stage of Seated Step Test in 1-Minute Intervals by Age Group (N=537)[1]



(Women's Health and Aging Study, physical assessment, 1992-1995)

[1]If a participant started a stage but did not complete 2 minutes, she was assumed to have completed 1 minute. 537 women started the test and completed the first minute.

Figure 10.3: Among Persons Attempting Test, Percent Completing Each Stage of Seated Step Test in 1-Minute Intervals by Disability Level (N=537)[1]



(Women's Health and Aging Study, physical assessment, 1992-1995)

[1]If a participant started a stage but did not complete 2 minutes, she was assumed to have completed 1 minute. 537 women started the test and completed the first minute.

stage, in contrast to the less disabled women, of whom 75 percent and 31 percent completed the first and second stages, respectively. Differences across age groups and disability levels in actual test performance were relatively small owing to the strict exclusion criteria.

Body Composition

Body composition and fatness are represented by body mass index (BMI), which is derived from measured weight in kilograms divided by height in meters squared, and by triceps skinfold thickness. Height and weight were measured with the participant standing in stocking feet wearing light indoor clothing. The participant's head was positioned against a level doorway using a Frankfort plane, and height was measured to the nearest centimeter using a stadiometer. Weight was measured in kilograms using a bathroom-type digital scale. Knee height was measured using a mediform sliding caliper (Medical Express, Beaverton, OR) with the participant in a semi-recumbent position with her left knee and ankle bent at 90^0 angles. When standing height was unavailable, height in centimeters was estimated from the average of two knee height measurements using the following formula: 84.88 + 1.83 (knee height) - 0.24 (age) (Chumlea et al., 1985).

Triceps skinfold thickness is a standard measure of body fatness and nutritional status. Skinfold thickness was measured at the midpoint of the upper right arm with Holtain skinfold calipers (Seritex, Carlstadt, NJ) to the nearest 0.2 millimeters in accordance with standard procedures (Lohman et al., 1988). If the difference between the first and second measure exceeded 2.0 millimeters, a third reading was done. Skinfold thickness values represent the mean of the first and second measures except when a third measure was taken which occurred for 70 (7 percent) of the participants. When the third measure fell within 2.0 millimeters of either the first or second measure, skinfold thickness was determined by averaging the third reading with the next closest one. If the third measure was within 2.0 millimeters of both the first and second measures, all three were averaged.

Table 10.4 gives the mean and median values of BMI and the percentages under- and overweight based on the 15th and 85th percentiles, respectively, of BMI derived from the first National Health and Nutrition Examination Survey (NHANES I) for females age 70 to 74 years (Must et al., 1991). Data are presented by age group, disability level, and race. For the total study population, the median BMI was 27.4 and the mean was 28.9, a reflection of extreme obesity in a small number of participants. The prevalence of overweight in this population was greater than in the general population of women age 70 to 74 years, with over 28 percent having a BMI above the 85th percentile value. Overweight, including extreme obesity (BMI greater than 35) was more prevalent in the Black than the White population, with over 37 percent having a BMI greater than the 85th percentile.

The prevalence of under- and overweight varied greatly by both race and age group. Women age 65 to 74 years had the highest rate of overweight, with 34 percent of the White and 49 percent of the Black women having a BMI above the 85th percentile. Underweight in this age group was rare. The prevalence of overweight dropped to 23 percent in women age 75 to 84 years and to 12.5 percent in the oldest participants. This decline was observed for both Blacks and Whites, although it was somewhat steeper for Blacks. Mirroring the decline in overweight was an increase in the prevalence of underweight with increasing age, from 6 percent in those age 65 to 74 years up to 20 percent in women age 85 years and older. Extreme low weight was not common in this population and underweight was no more prevalent in these disabled women than in community-dwelling women of similar age (Must et al., 1991).

For the most part, the prevalence of extremes of BMI did not vary with severity of disability. The two exceptions were the relatively high rate

of underweight (20 percent) in the most disabled White women and the relatively low rate of underweight (4.6 percent) in the most disabled Black women.

Table 10.5 presents the mean and median values of triceps skinfold thickness and the percentages of low and high values based on the 15th and 85th percentiles, respectively, of skinfold thickness derived from NHANES I for females age 70 to 74 years (Must et al., 1991). Data are presented by age group, disability level, and race. The mean thickness was 21.9 millimeters and the median was 20.7 millimeters which reflects the presence of extreme obesity in a small proportion of participants. Racial differences in skinfold thickness were less pronounced than those for BMI; Black participants had only slightly higher values than White participants and more similar percentages at the lower extreme.

Triceps skinfold thickness gives a somewhat different impression of the relative fatness of the study population than does BMI. On the basis of skinfold thickness, there does not appear to be a higher than expected prevalence of obesity; only 15 percent had a skinfold measurement at the 85th percentile or above. In contrast, more than 25 percent had a skinfold thickness at the 15th percentile or below. Analogous to the trend seen with BMI, the prevalence of high skinfold thickness was lower and the prevalence of low skinfold thickness was higher in the older age groups. Skinfold thickness did not vary much with disability level, with the exception of a moderately higher percentage of women with low values in the most disabled subgroup.

Summary

This population of disabled older women exhibits a broad range of exercise capacity, as assessed by both self-report and objective testing. The modified Specific Activity Scale (Goldman et al., 1981) gave a higher estimate of exercise tolerance than the seated step test (Smith and Gilligan, 1983), particularly considering that nearly half the study participants (those most likely to have the lowest levels of cardiorespiratory fitness), were excluded from the seated step test. Exercise tolerance assessments based on self-reported capacities, like the Specific Activity Scale, may overlook the role of compensatory strategies, such as reduced speed of performance and amount of work performed, and frequent rest periods (Fried et al., 1991). Extremely low exercise tolerance was common, yet low cardiorespiratory fitness did not consistently underlie functional limitation and disability in this population.

Amount of body fatness was also broadly distributed. On the basis of BMI, the study population appeared disproportionately overweight, particularly the African American women and those in the youngest age group. This observation is consistent with the well-established association between overweight and functional difficulties in older women (Ensrud et al., 1994; Galanos et al., 1994; Harris et al., 1989; Launer et al., 1994; Pinsky et al., 1985). The prevalence of severe underweight was relatively low in this disabled population, somewhat contrary to expectations (Galanos et al., 1994) and the conceptualization of frailty (Buchner and Wagner, 1992). The oldest old, however, tended to be thinner and had a markedly different distribution of BMI than younger women, suggesting an alteration in the relationship between physical function and body weight with increasing age.

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Table 10.1: Exercise Tolerance: Specific Activity Scale Score (Percent)[1,2,3]

Specific Activity Scale[4]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[5] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Score (approximate range in METs)[6]							
1 (<2)	5.6	3.4	6.8	9.0	0.5	3.7	23.0
2 (2-2.3)	5.5	4.5	5.1	9.6	2.1	3.9	17.9
3 (3-5)	20.1	19.8	18.1	26.4	16.2	23.3	19.4
4 (4.5-5.2)	11.9	9.6	13.5	14.7	10.1	12.7	14.0
5 (5-6)	33.5	34.6	35.1	25.9	41.3	31.8	21.1
6 (7-9)	23.3	28.1	21.5	14.4	29.8	24.7	4.6
Grouped score (approximate range in METs)[6]							
1-2 (0-2.3)	11.1	7.9	11.9	18.5	2.6	7.6	41.0
3-4 (3-5.2)	32.0	29.4	31.5	41.1	26.3	35.9	33.4
5-6 (5-9)	56.8	62.7	56.5	40.3	71.1	56.5	25.7

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Goldman L, Hashimoto B, Cook EF, Loscalzo A. (1981). Comparative reproducibility and validity of systems for assessing cardiovascular functional class: Advantages of a new specific activity scale. *Circulation* 64:1227-1234.
[4] Categories may not add up to 100% due to rounding.
[5] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[6] Scale ranges from 1 through 6, inclusive, where 1 represents the lowest and 6 the highest level of exercise tolerance. METs = metabolic equivalents.

Table 10.2: Participants Meeting Specific Exclusion Criteria for Seated Step Test[1]

Exclusion	Number	Percent
History of:		
Aortic stenosis	0	0.0
Myocardial infarction (MI) in past 6 months	13	1.3
Unstable angina or angina at rest	41	4.1
Severe hip or knee pain due to arthritis	14	1.4
At time of visit:		
Bedridden	6	0.6
Chairbound	24	2.4
Acute infection	3	0.3
Unstable angina or angina at rest	12	1.2
On examination:		
Loud systolic murmur	87	8.7
Congestive heart failure	2	0.2
Shortness of breath at rest	22	2.2
Resting Diastolic BP >110 mmHg or Systolic BP >200 mmHg	57	5.7
Severe weakness in one or both legs	88	8.8
Resting heart rate exceeds 75% of predicted maximum[2]	7	0.7
From ECG:		
Atrial fibrillation	46	4.6
Atrial flutter	1	0.1
Wolf-Parkinson-White or ventricular pre-excitation	0	0.0
Wide QRS ≥ 120 m sec	113	11.3
Idioventricular rhythm/complete heart block	2	0.2
Ventricular tachycardia	10	1.0
Acute pericarditis	0	0.0
Any reference to acute injury, ischemia, or MI	3	0.3
Resting heart rate ≤ 45 bpm	5	0.5
Resting heart rate ≥ 120 bpm	4	0.4
From rhythm strip:		
Ventricular arrhythmias: ≥ 3 premature ventricular contractions per 30 seconds	4	0.4
Number of exclusions met		
1	342	34.1
2	84	8.4
3 or more	16	1.6
Participants excluded		
Age group		
65-74	132	34.0
75-84	142	45.7
85 +	168	55.5
Disability level		
Moderate	129	37.6
ADL difficulty: receives no help	201	42.1
ADL difficulty: receives help	112	61.9
Total	442	44.1
Did not attempt for other reason[3]	23	2.3
Number attempting test	537	53.7

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Results are based on unweighted data.
[2] .75(200-age)
[3] Did not meet exclusion criteria and responded "Yes" to "Do you see any reason why you could not perform this test?"

Table 10.3: Participants Meeting Specific Stopping Criteria for Seated Step Test (N=504)[1]

Stopping Criterion	Number	Percent
Symptoms:		
Chest pain	2	0.4
Lightheaded or dizzy	0	0.0
Short of breath	18	3.6
Leg pain	5	1.0
On examination:		
Diastolic BP > 110 mmHg or systolic BP > 200 mmHg	13	2.6
Diastolic BP < 60 mmHg or systolic BP < 90 mmHg	0	0.0
O_2 saturation ≤ 80%	0	0.0
Heart rate exceeds 75% of predicted maximum[2]	48	9.5
From ECG rhythm strip:		
Wide QRS ≥ 120 m sec	1	0.2
Ventricular arrhythmias: ≥ 3 premature ventricular contractions per 30 seconds	7	1.4
ST depression exceeding 1 mm measured 2 mm past end of QRS	1	0.2
Borg perceived exertion scale ≥ 8	143	28.4
Participant says she cannot continue	210	41.7
Participant says she is too tired	2	0.4
Participant reports pain	18	3.6
Participant unable to lift leg	16	3.2
Other	18	3.6
Unknown	2	0.4
Total participants who stopped before test end	504	93.9[3]

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Results are based on unweighted data.
[2] .75(200-age).
[3] Percent based on number of participants who started the test (N=537).

Table 10.4: Body Mass Index[1,2]

Body Mass Index (kg/m^2)	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
Total	(N = 924)	(N = 358)	(N = 287)	(N = 279)	(N = 333)	(N = 455)	(N = 136)
Mean	28.9	31.1	27.6	26.1	27.9	29.6	29.4
Median	27.4	29.5	27.1	25.6	27.0	27.9	27.0
Percent underweight (≤21.44)[4]	11.7	5.9	15.3	19.1	12.7	10.0	15.5
Percent overweight (≥31.58)[5]	28.5	39.1	23.1	12.5	24.0	31.1	31.8
Whites	(N = 667)	(N = 235)	(N = 208)	(N = 224)	(N = 221)	(N = 352)	(N = 94)
Mean	28.0	29.8	27.2	25.9	27.0	28.6	28.7
Median	26.9	28.8	27.0	25.4	26.5	27.7	26.3
Percent underweight (≤21.44)[4]	12.5	5.6	15.7	20.9	12.1	10.8	20.4
Percent overweight (≥31.58)[5]	24.9	33.7	21.6	12.1	17.8	28.0	31.4
Blacks	(N = 254)	(N = 120)	(N = 79)	(N = 55)	(N = 111)	(N = 101)	(N = 42)
Mean	31.3	33.8	28.8	26.9	29.7	33.1	30.9
Median	28.9	31.5	28.0	27.0	29.0	29.4	28.2
Percent underweight (≤21.44)[4]	9.9	6.6	13.9	12.0	14 1	7.2	4.6
Percent overweight (≥31.58)[5]	37.5	49.2	27.5	14.0	35.8	41.2	32.6

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Weight(kg)/height(m)^2. If a participant's height was not measured, it was estimated from the average of two knee height measurements. The estimated height in cm = 84 88 + 1 83 (knee height) - 0.24(age). Chumlea WC, Roche AF, Steinbaugh ML. Estimating stature from knee height for persons 60 to 90 years of age. *J Am Geriatr Soc* 1958, 33: 116-120.

[2] Descriptive statistics are based on weighted data.

[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

[4] 15th percentile or below, based on data from NHANES I for females age 70 to 74 years in Must A, Dallal GE, Dietz WH. (1991). Reference data for obesity: 85th and 95th percentiles of body mass index (wt/ht^2) and triceps skinfold thickness. *Am J Clin Nutr* 53:839-846.

[5] 85th percentile or above, based on previous reference.

Table 10.5: Triceps Skinfold Thickness[1,2]

Triceps Skinfold Thickness (mm)	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
Total	(N = 995)	(N = 384)	(N = 309)	(N = 302)	(N = 342)	(N = 473)	(N = 180)
Mean	21.9	24.4	20.8	17.4	21.8	22.0	21.7
Median	20.7	24.0	19.8	17.4	21.0	20.4	19.9
Percent low (≤16.3)[4]	25.6	14.6	29.9	45.9	24.4	24.5	31.3
Percent high (≥30.8)[5]	15.2	22.1	11.6	5.2	14.3	14.9	17.9
Whites	(N = 709)	(N = 248)	(N = 219)	(N = 242)	(N = 228)	(N = 361)	(N = 120)
Mean	21.4	24.2	20.4	17.1	21.2	21.6	21.0
Median	20.2	23.3	20.2	17.3	20.8	20.2	19.6
Percent low (≤16.3)[4]	25.3	13.4	28.0	47.1	24.0	24.2	32.0
Percent high (≥30.8)[5]	12.2	20.3	7.6	3.9	10.3	12.7	14.3
Blacks	(N = 281)	(N = 131)	(N = 90)	(N = 60)	(N = 113)	(N = 109)	(N = 59)
Mean	23.1	25.0	21.9	18.4	23.1	23.3	23.0
Median	21.1	24.8	19.5	18.7	22.2	20.9	20.7
Percent low (≤16.3)[4]	26.9	17.8	35.5	40.9	25.4	26.3	31.1
Percent high (≥30.8)[5]	23.4	26.4	22.8	10.6	23.0	22.6	25.6

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Skinfold thickness was usually computed by averaging the first two measures. A third measure was taken if the difference between the first two exceeded 2 mm. If the third measure was within 2 mm of just one of the earlier measures then the average of the two close measures was computed. Otherwise, the average of three measures was used. When a single measure was taken then it was used for the thickness.

[2] Descriptive statistics are based on weighted data.

[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

[4] 15th percentile or below, based on data from NHANES I for females age 70 to 74 years in Must A, Dallal GE, Dietz WH. (1991). Reference data for obesity: 85th and 95th percentiles of body mass index (wt/ht^2) and triceps skinfold thickness. *Am J Clin Nutr* 53:839-846.

[5] 85th percentile or above, based on previous reference.

11

Pulmonary Diseases and Conditions

Marcel E. Salive, Marco Pahor, Melvyn S. Tockman

Chronic obstructive pulmonary diseases (COPD) and related diseases are the fourth leading cause of death in the United States, and death rates for these conditions rose 36 percent from 1979 through 1992 (Kochanek and Hudson, 1995). Pneumonia and influenza are the sixth leading cause of death, with an increase of 13 percent during the same period. As a cause of disability, lung disease ranked fifth when 5,201 older adults in the Cardiovascular Health Study (CHS) were asked about the cause of any disability in 17 specific tasks, accounting for 6 percent of task-disabilities (Ettinger et al., 1994). In the Framingham study cohort, persons diagnosed with COPD using spirometry were significantly more likely than unaffected persons to have disability in stair climbing, walking a mile, performing heavy home chores, and light housekeeping, but they did not differ in their ability to shop, carry bundles, or cook (Guccione et al., 1994); the results were adjusted for age, sex, and comorbidity. In another CHS analysis, self-reported lung disease was significantly associated with disability in each of four domains studied (which were similar to those used to screen the Women's Health and Aging Study [WHAS] population—see Chapter 1). However, lower forced expiratory volume in 1 second (FEV_1), a measure of obstructive disease, was associated with difficulty only in the mobility and higher functioning domains, not with self-care or upper extremity disability (Fried et al., 1994).

Conversely, physical disability in walking a half-mile, climbing stairs, or performing heavy housework or activities of daily living (ADLs) is a possible risk factor for pneumonia-related mortality in older adults, after accounting for smoking and the effects of comorbidity (Salive et al., 1993). Taken together, the evidence presented above suggests that pulmonary conditions and physical disability can combine to trigger a spiraling decline in health among older adults that may result in death. This chapter examines the relation of pulmonary diseases and conditions, as well as physiologic measures of lung function, with age and disability in the WHAS.

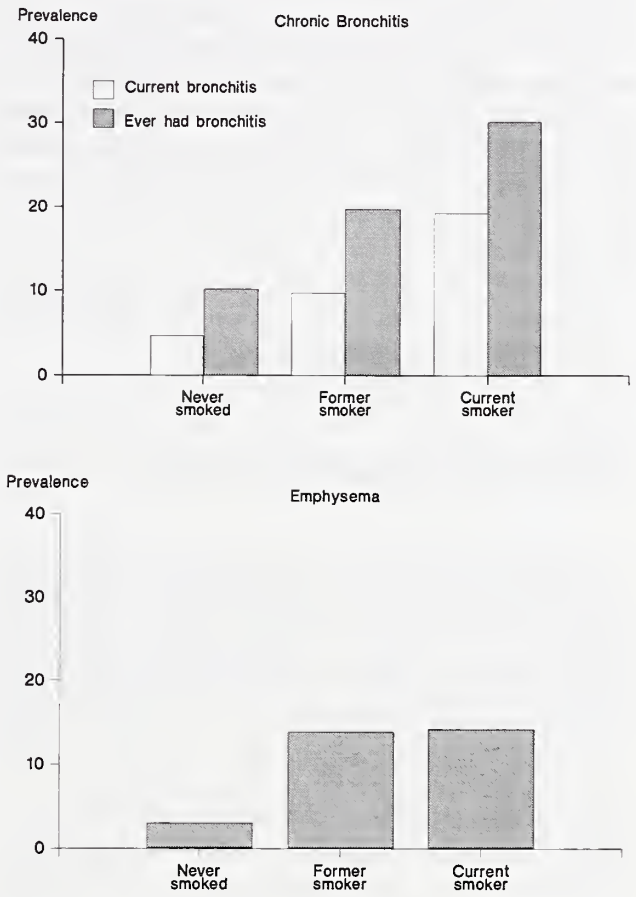
About 10 percent of the women screened for the study reported a history of lung disease such as emphysema or chronic bronchitis (see Chapter 1, Table 1.3). In the total screened population, self-reported lung disease was related to disability: 17 percent of those who were eligible for the study reported such disease compared with only 7 percent among ineligible women who were not disabled.

Self-Reported Pulmonary Diseases

Although 16 percent of study participants reported a lifetime history of chronic bronchitis, only half that number reported that they currently have the condition (Table 11.1). Nine percent of participants reported a physician diagnosis of emphysema. While 11 percent reported a lifetime history of asthma, only 8 percent reported currently having asthma. Thirteen percent reported a history of pneumonia within 5 years of the baseline interview; slightly over half of these cases required hospitalization.

In the total population, self-reported pulmonary diseases appear to decline in prevalence with age. This decline parallels reported smoking in the study group. Thirteen percent of the women enrolled in the study were current smokers, ranging from 18 percent among the 65 to 74 year age group to only 6 percent in the women age 85 years and older (see Chapter 5, Table 5.3). Table 11.1 shows the prevalence of pulmonary conditions according to smoking status. For each age group and all disability levels, current and former smokers had substantially higher rates of chronic bronchitis and emphysema than never smokers. Overall, 14 percent of current smokers reported emphysema compared with only 3 percent of never smokers. Figure 11.1 shows the prevalence of chronic bronchitis and emphysema for never, former, and current smokers. There is a clear increase in the prevalence of chronic bronchitis across these smoking categories, with 19 percent of current smokers reporting current bronchitis. Emphysema was equally common in former and current smokers (14 percent). Asthma rates were unrelated to smoking status. Even after stratification by smoking status, chronic bronchitis and emphysema generally decrease in prevalence with age, probably as a result of high mortality rates in older people who have these conditions. Contrary to expectations, prevalence of chronic lung diseases did not increase according to disability level, possibly because of competing risks from other tobacco-related illnesses and selective survival of the never smokers.

Figure 11.1: Pulmonary Disease and Cigarette Smoking Status[1]



(Women's Health and Aging Study, baseline interview, 1992-1995)

[1]Based on weighted data.

Pulmonary Symptoms

A series of 18 questions derived from the American Thoracic Society questionnaire (Ferris, 1978) was asked to determine symptoms of pulmonary disease (Table 11.2). Twenty percent of participants reported usually coughing in the morning, and 22 percent reported coughing during the rest of the day or at night. Overall, 30 percent of participants reported a history of a regular cough either upon arising or during the day or night, or both. The majority of these women have had their cough for more than a year. Production of phlegm was also a common complaint, reported by 31 percent of women in the study, more commonly upon getting up in the morning. Again, most participants who produced phlegm reported that they had done so for more than a year. Cough and phlegm production were lower in the oldest age group, parallel to reported smoking.

While about two in five participants reported a wheezing sound from their chests during a common cold episode, only 16 percent reported wheezing apart from a cold, and less than half of

these persons (8 percent) had it most days or nights. Among those who had a wheezing sound without a cold, most reported a duration of more than a year. Wheezing symptoms apart from a cold and wheezing most days or nights were inversely associated with age and modestly higher in the group with more severe disability. One in five persons reported wheezing attacks resulting in shortness of breath, of whom 15 percent required treatment. In contrast to the reported prevalence of respiratory disease, respiratory symptom prevalence was often greater among those who reported disability.

Spirometric Measurements

Lung function was measured in the home examination according to a standard protocol based on the guidelines of the Epidemiology Standardization Project (Ferris, 1978) and the American Thoracic Society (1991). A PJ5 Spirometer with a pneumotachograph (Tamarac Co.) was connected to an IBM-compatible notebook computer (Zeos International, Ltd., Minneapolis, MN) using software developed and modified by the National Institute for Occupational Safety and Health (NIOSH). The nurses performing the examination were trained and certified, and their performance was closely monitored by NIOSH staff.

During at least five forced expirations, the nurse attempted to obtain three acceptable spirograms with at least two having similar results (within 5 percent) for FEV_1 and forced vital capacity (FVC). The acceptability and reproducibility of the spirograms were indicated by the computer program, confirmed by the nurse, and ultimately determined at the NIOSH reading center. The largest FEV_1 and the largest FVC on any of the acceptable tests were reported (American Thoracic Society, 1991). Sex-specific predicted values for FEV_1 and FVC, adjusted for age and height, were computed from Knudson's equations (Knudson et al., 1983).

Exclusionary criteria for spirometry were the report of any of the following within the 6 weeks prior to the examination: chest or abdominal surgery (n=8), hospitalization for a heart attack (n=4) or other heart problem (n=23), or detached retina or eye surgery (n=20). Three persons who had been hospitalized for a respiratory infection within 3 weeks prior to the examination and 84 additional persons were excluded at the discretion of the examiner, for an overall total of 142 persons excluded from the testing for medical or safety reasons.

Among those not excluded, nine participants refused to complete the spirometry examination, two were physically unable to cooperate, and two were unable to follow the instructions of the examiner. Seven persons were unable to complete the examination owing to equipment failure. Overall, 840 persons completed spirometry for a completion rate of 85 percent (Table 11.3). The completion rate was higher in the youngest age group and slightly lower among persons with more severe disability. Among those who completed testing, 77 percent had reproducible tests. The reproducibility rate was unrelated to age but was somewhat lower among women with more severe disability.

Spirometry examination results are presented in Table 11.4 only for persons with reproducible tests. The mean FEV_1 was 1.4 liters, slightly lower among the oldest women and those with the most severe disability. The forced expiratory volume in 6 seconds (FEV_6) approximates the total expiratory volume without depending on the duration of the test, as does the FVC. The mean FEV_6 was 1.9 liters and also was lower with increasing age and disability. The FVC showed slightly higher results, particularly among the women with the best pulmonary function (95th percentile). The mean ratios of FEV_1/FEV_6 and FEV_1/FVC showed little variation by age or disability level, although in the lower end of the distribution (5th and 25th percentiles) there is evidence of possible obstructive changes. The mean predicted volumes also have

little variation by age or disability level but a considerable range in their distributions.

Tables 11.5 and 11.6 present the data on physiologic impairment based on two methods of spirometry interpretation. Table 11.5 presents NIOSH interpretations, with normal values at or above the 5th percentile based on the predicted values of Knudson and colleagues (1983). This interpretation suggests that only a slight majority (52 percent) have normal pulmonary function as assessed by spirometry. Table 11.6 presents the results using a different method, based on the recommendations of the American Thoracic Society (1991). Distributions of the spirometry variables from a benchmark subgroup of the study population—composed of never smokers who did not report cough, sputum production, or wheezing (n=205)—were used to develop normal values, considered to be at or above the fifth percentile. Using these criteria, only one-quarter of the population was found to have any abnormality (Table 11.6). Eighteen percent of participants had an obstructive pattern, with prevalence decreasing with increasing age and level of disability. Conversely, a restrictive pattern was highest among women age 85 years and older and women who received help with ADLs. Similar relationships of obstructive and restrictive lung disease with age and disability level were seen using the NIOSH interpretations (Table 11.5).

Summary

Much of the relation of self-reported lung diseases and symptoms to age and disability can be explained by age and smoking status. Spirometry examination was successfully completed in the home by about two-thirds of study participants. Successful pulmonary function testing was inversely related to disability but not to age. The results from this examination may be useful to further explore the relation of lung function to physical disability in this cohort of moderately to severely disabled older women.

Acknowledgments

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Table 11.1: Percent Prevalence of Self-Reported Pulmonary Conditions[1,2]

		Age Group			Disability Level		
						ADL Difficulty	
	Total	65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
Total	(N = 1002)	(N = 388)	(N = 311)	(N = 303)	(N = 343)	(N = 478)	(N = 181)
Chronic bronchitis							
Ever[4]	16.4	20.3	16.2	5.6	19.2	15.4	13.2
Current[5]	8.4	10.2	8.4	3.4	10.4	7.3	7.7
Emphysema[4]	8.5	11.3	7.3	4.0	10.8	7.8	5.8
Asthma							
Ever[4]	11.3	14.2	10.9	4.0	11.2	11.8	10.4
Current[5]	7.6	10.9	5.8	2.6	8.6	7.8	5.0
Have you been treated for pneumonia in the past 5 years?							
Yes	13.3	13.0	15.2	9.3	14.9	11.7	14.7
Did you require a stay in the hospital for treatment (of pneumonia)?							
Yes	7.1	6.9	8.0	5.5	8.6	6.0	7.3
Current and Former Cigarette Smokers[6,7]	(N = 469)	(N = 224)	(N = 147)	(N = 98)	(N = 182)	(N = 217)	(N = 70)
Chronic bronchitis							
Ever[4]	22.5	26.4	21.3	7.9	26.1	20.2	20.2
Current[5]	12.2	14.6	11.2	4.0	14.6	10.1	12.3
Emphysema[4]	14.0	17.2	11.0	9.8	15.2	13.8	11.6
Asthma							
Ever[4]	11.2	13.7	9.0	6.5	12.3	11.0	8.9
Current[5]	8.2	11.0	6.0	3.2	9.8	7.5	6.5
Have you been treated for pneumonia in the past 5 years?							
Yes	16.1	17.3	16.1	9.8	16.7	13.6	22.2
Did you require a stay in the hospital for treatment (of pneumonia)?							
Yes	8.4	8.3	8.6	7.8	10.7	6.0	9.7
Never Smoked Cigarettes[6,8]	(N = 533)	(N = 164)	(N = 164)	(N = 205)	(N = 161)	(N = 261)	(N = 111)
Chronic bronchitis							
Ever[4]	10.2	11.8	11.5	4.5	10.4	11.0	8.0
Current[5]	4.7	4.3	5.9	3.2	5.2	4.7	4.3
Emphysema[4]	3.0	3.0	4.0	1.0	5.4	2.2	1.5
Asthma							
Ever[4]	11.5	14.9	12.6	2.7	9.8	12.6	11.6
Current[5]	6.9	10.9	5.7	2.3	7.0	8.1	3.8
Have you been treated for pneumonia in the past 5 years?							
Yes	10.6	7.1	14.4	9.1	12.6	9.9	9.2
Did you require a stay in the hospital for treatment (of pneumonia)?							
Yes	5.8	4.8	7.5	4.3	6.0	5.9	5.5

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] "Yes" response to a question in the form "Has a doctor ever told you that you had . . . ?"
[5] "Yes" response to "Do you still have it?"
[6] Which of the following best describes your current smoking status?
[7] "Former smoker who quit more than 1 year ago"; "Former smoker who quit 1 year ago or less"; or "Current smoker" in response to the smoking status question.
[8] Response of "never smoked" to the smoking status question.

Table 11.2: Percent Prevalence of Self-Reported Pulmonary Symptoms[1,2]

Symptom	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Do you usually cough . . . ?							
On getting up, first thing in the morning							
Yes	19.7	21.3	20.3	13.8	18.9	21.0	17.8
During the rest of the day or during the night							
Yes	21.6	22.5	23.3	14.5	22.0	19.7	26.2
Duration of cough[4]							
Less than 1 month	4.8	5.2	4.5	4.6	4.3	4.1	7.9
1-12 months	9.5	10.7	9.2	6.9	8.1	9.5	12.3
Over 12 months	15.8	16.0	17.1	11.7	18.2	16.2	9.9
Do you usually bring up phlegm . . . ?							
On getting up, first thing in the morning							
Yes	23.6	24.3	24.1	20.3	22.6	22.7	28.3
During the rest of the day or during the night							
Yes	18.0	19.9	17.6	13.7	19.6	17.1	17.3
Duration of phlegm production[4]							
Less than 1 month	4.4	5.7	3.0	4.3	3.9	3.7	7.3
1-12 months	8.4	8.5	8.4	8.3	8.8	6.9	11.8
Over 12 months	18.2	18.0	19.7	14.5	18.5	18.7	16.0
Does your chest ever sound wheezy or whistling . . . ?							
When you have a cold							
Yes	42.6	51.7	40.1	22.5	46.2	42.0	36.7
Apart from when you have a cold							
Yes	16.4	21.3	14.5	6.7	16.7	14.6	20.7
Most days or nights[5]							
Yes	7.6	10.0	6.5	3.5	8.0	5.9	11.4
Duration of wheezing[4,5]							
Less than 1 month	2.0	3.3	0.9	1.0	2.3	1.3	3.0
1-12 months	5.2	6.6	4.5	2.7	5.1	5.2	5.1
Over 12 months	9.0	11.1	9.1	3.0	8.7	8.0	12.6
Attack of wheezing resulting in shortness of breath[6]							
One episode only	5.4	6.2	4.9	4.2	6.2	4.6	5.8
Two or more episodes	14.6	19.0	13.8	4.1	12.6	14.4	19.2
Have you ever required medicine or treatment for the(se) attack(s)?							
Yes	15.2	19.5	14.2	5.7	15.7	15.0	14.9

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question is in the form "Have you had this . . . for . . ?"
[5] Asked of participants who reported that the chest sounded wheezy or whistling apart from when they had a cold.
[6] Have you ever had an attack of wheezing that has made you feel short of breath? Have you had two or more such episodes?

Table 11.3 Spirometry Examination Results[1]

Test Result	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[2] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Attempting spirometry							
Number	840	338	255	247	292	406	142
Percent	84.7	87.6	82.2	82.9	85.2	85.3	82.0
If attempted: Acceptable reproducibility[3]							
Number	639	260	195	184	225	319	95
Percent	77.2	76.8	77.9	76.5	78.7	79.2	68.1

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[3] Three acceptable trials, free of coughs, early termination or extrapolated volume.

Table 11.4: Spirometry Results[1,2]

Test Result	Total (N = 639)	Age Group			Disability Level		
		65-74 (N = 260)	75-84 (N = 195)	85 + (N = 184)	Moderate[3] (N = 225)	ADL Difficulty	
						Receives No Help (N = 319)	Receives Help (N = 95)
Forced expiratory volume in the first second (FEV_1) (liters)							
Mean	1.4	1.5	1.4	1.2	1.5	1.5	1.4
5th percentile	0.7	0.8	0.7	0.7	0.7	0.7	0.7
25th percentile	1.1	1.1	1.1	1.0	1.1	1.1	1.0
50th percentile	1.4	1.6	1.4	1.2	1.4	1.4	1.3
75th percentile	1.7	1.9	1.7	1.5	1.8	1.8	1.5
95th percentile	2.2	2.3	2.1	1.8	2.2	2.2	2.1
Forced expiratory volume in 6 seconds (FEV_6) (liters)							
Mean	1.9	2.1	1.9	1.6	2.0	1.9	1.7
5th percentile	1.0	1.2	1.1	0.8	1.1	1.1	0.9
25th percentile	1.5	1.7	1.5	1.3	1.6	1.5	1.3
50th percentile	1.9	2.1	1.9	1.6	1.9	1.9	1.6
75th percentile	2.2	2.4	2.2	1.9	2.3	2.3	2.0
95th percentile	2.7	3.0	2.7	2.4	2.8	2.7	2.6
Forced vital capacity (FVC) (liters)							
Mean	2.0	2.1	2.0	1.6	2.1	2.0	1.8
5th percentile	1.1	1.3	1.1	0.8	1.1	1.1	0.9
25th percentile	1.5	1.7	1.6	1.4	1.6	1.6	1.3
50th percentile	1.9	2.1	1.9	1.7	2.0	2.0	1.6
75th percentile	2.3	2.5	2.3	2.0	2.4	2.4	2.1
95th percentile	3.0	3.3	2.9	2.5	3.0	3.0	2.8
FEV_1/FEV_6 (percent)							
Mean	75.7	74.5	75.4	79.8	74.9	75.1	79.6
5th percentile	55.6	53.0	56.5	60.5	52.9	55.8	62.7
25th percentile	70.6	70.7	69.5	71.4	69.2	70.2	73.6
50th percentile	76.2	76.3	75.6	76.4	75.2	76.2	78.7
75th percentile	81.4	80.9	81.5	83.1	80.6	80.9	87.3
95th percentile	97.5	89.6	100.0	100.0	95.0	97.3	100.0
FEV_1/FVC (percent)							
Mean	72.9	71.7	72.8	76.8	71.5	72.4	78.1
5th percentile	50.2	49.0	48.8	56.0	48.1	51.2	60.9
25th percentile	66.6	65.4	65.6	68.9	65.1	66.5	70.7
50th percentile	73.4	73.1	72.4	74.6	72.3	73.1	77.7
75th percentile	80.3	79.9	80.5	82.9	79.9	79.5	87.1
95th percentile	97.1	88.8	99.3	100.0	94.9	97.1	99.3
Percent of predicted FEV_1[4]							
Mean	78.3	76.7	79.2	81.3	76.9	80.2	75.6
5th percentile	41.9	40.7	40.0	45.4	43.1	40.9	42.1
25th percentile	62.6	61.4	63.6	66.2	60.2	65.2	61.6
50th percentile	80.7	79.4	80.0	83.3	78.9	83.6	75.5
75th percentile	95.6	92.1	97.4	101.0	93.6	98.3	91.1
95th percentile	116.4	112.1	114.5	121.5	114.2	116.9	113.3
Percent of predicted FVC[5]							
Mean	83.2	84.0	83.5	79.8	83.6	85.2	75.3
5th percentile	47.6	50.9	48.8	44.2	50.5	50.9	40.2
25th percentile	69.4	71.7	68.1	68.2	70.3	70.8	61.3
50th percentile	82.0	82.9	82.3	80.1	82.0	84.2	73.7
75th percentile	99.0	98.9	100.4	96.4	99.1	100.4	90.1
95th percentile	120.1	119.6	119.1	121.5	120.5	120.4	113.8

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] FEV_1/predicted FEV_1.
[5] FVC/predicted FVC.

Table 11.5: Spirometry Interpretation by National Institute for Occupational Safety and Health (NIOSH) (Percent)[1,2]

Test Result[3]	Total (N=639)	Age Group			Disability Level		
		65-74 (N=260)	75-84 (N=195)	85+ (N=184)	Moderate[4] (N=225)	ADL Difficulty: Receives No Help (N=319)	ADL Difficulty: Receives Help (N=95)
Normal pattern	51.6	54.4	46.3	57.3	48.6	55.0	47.6
Obstructive pattern							
Mild	11.5	12.7	13.0	4.1	15.1	10.0	8.0
Moderate or severe	7.2	7.5	7.6	5.1	8.8	7.7	1.3
Restrictive pattern							
Mild	7.7	4.1	11.6	8.6	6.1	9.0	7.7
Moderate or severe	13.2	11.6	12.4	20.0	11.7	8.7	31.7
Obstructive and restrictive							
Mild	0.4	0.4	0.6	0.2	1.1	0.1	0.0
Mild obstructive/moderate to severe restrictive	2.4	1.9	3.6	0.8	2.0	3.1	1.1
Mild restrictive/moderate to severe obstructive	2.2	2.7	1.1	3.4	1.5	2.5	2.6
Moderate to severe	3.8	4.8	3.9	0.6	5.2	4.0	0.0

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 11.6: Spirometry Interpretation for All Participants Based on Benchmark Group (Percent)[1,2,3]

Interpretation[4]	Total (N=639)	Age Group			Disability Level		
		65-74 (N=260)	75-84 (N=195)	85+ (N=184)	Moderate[5] (N=225)	ADL Difficulty: Receives No Help (N=319)	ADL Difficulty: Receives Help (N=95)
Normal pattern	75.2	72.8	76.7	78.9	71.6	76.6	79.6
Obstructive pattern[6]	17.6	21.1	16.8	9.0	21.7	17.9	6.3
Restrictive pattern[7]	7.2	6.2	6.6	12.1	6.7	5.5	14.1

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] The benchmark group consists of participants with no self-report of cough, phlegm, chest wheezing or whistling apart from a cold, or history of smoking cigarettes.
[4] Categories may not add up to 100% due to rounding.
[5] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[6] Percent predicted FEV_1/percent predicted FVC less than 5th percentile of the benchmark group.
[7] Percent predicted FEV_1/percent predicted FVC at least 5th percentile of the benchmark group, and percent predicted FVC less than 5th percentile of the benchmark group.

12

Musculoskeletal Disease

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Arthritis and related musculoskeletal diseases are the most common chronic conditions among older adults in the United States (Lawrence et al., 1989; Scott and Hochberg, 1993). These diseases are strongly associated with the presence of functional limitations, disability, and reduced quality of life in this segment of the population (Badley, 1995; Ettinger et al., 1994; Guccione et al., 1994; Hughes et al., 1993; Jette et al., 1990; Stewart et al., 1989; Verbrugge et al., 1991).

This chapter describes the prevalence of common arthritic and other musculoskeletal diseases and the symptoms of these conditions, as reported by participants in the Women's Health and Aging Study (WHAS). The prevalence of physical signs of arthritis noted on an examination performed by a trained nurse and the results of lower extremity muscle strength testing are also described. Finally, prevalence estimates are examined in relation to both age and the level of disability.

Self-Reported Musculoskeletal Conditions

Table 12.1 reports the prevalence of arthritis, defined as a positive response to the question "Has a doctor ever told you that you had arthritis?" Three-quarters of disabled women age 65 years and older reported being diagnosed with arthritis by a doctor; prevalence did not vary with age. Prevalence of physician-diagnosed arthritis was, however, slightly more common in women with difficulty in activities of daily living (ADLs) than in moderately disabled women.

As expected, the most commonly reported type of arthritis was osteoarthritis; however, the majority of women with self-reported physician-diagnosed arthritis did not know what type of arthritis they had. About 12 percent of these women reported rheumatoid arthritis; the prevalence of definite rheumatoid arthritis in women age 65 to 79 years in the United States was estimated as 5 percent (Lawrence et al., 1989). Reported rheumatoid arthritis was most common in women who received help in performing ADLs and least common in women with moderate disability.

Table 12.1 also gives information on current treatment for arthritis. The denominator for the percentages in this table is the total number of women in each age or disability category, not just those who reported a physician diagnosis of arthritis. Reported current treatment for arthritis was slightly higher among women with ADL difficulty than in those with moderate disability. Overall, less than 9 percent of women reported having surgery for treatment of arthritis; the majority of these women had surgery on their knees. Joint surgery in general, and hip and knee surgery specifically, were more commonly reported by women having difficulty with ADLs than by women with moderate disability but no ADL difficulty.

The prevalence of other osteoarticular conditions is presented in Table 12.2. Sixteen percent

of women reported having been told by a doctor they had osteoporosis; however, only one-third of these women reported current treatment for osteoporosis. The prevalence of reported osteoporosis was highest among women age 75 to 84 years, and the proportion of those with osteoporosis reporting current treatment was lowest in those age 85 years and older.

Table 12.2 also shows the prevalence of reported fractures. Six percent of the women reported hip fracture. The prevalence increased with age, with 15 percent of women age 85 years and older reporting a hip fracture. Women with ADL difficulty, especially those who received help, were more likely to report having had a hip fracture than those with only moderate disability. Fractures of other bones, particularly the wrist or arm, were very common in these women. Overall, one-third of women reported one or more fractures; the prevalence in women age 75 years and older was approximately 40 percent. Women with ADL difficulty were more likely to report a prior fracture than women with only moderate disability. About one-fifth of women reported a history of disc disease or spinal stenosis. Of these women, only 5 percent reported surgical treatment. The prevalence of reported disc disease or spinal stenosis was greater in women with ADL difficulty than in those with only moderate disability.

Self-Reported Musculoskeletal Symptoms

The prevalence of reported pain ". . . on most days for at least one month . . ." in the hands or wrists, hips, knees, feet, and lower back during the past year by age and level of disability is shown in Table 12.3. The most common site of pain was the knees, followed by the lower back, feet, hands or wrists, and hips. Over one-half of women had pain or stiffness in the hands or wrists and in the knees in the past month, and about 40 percent of women had pain in the hips and in the feet during the previous month. The prevalence of reported pain at each site, during both the past year and the month before the interview, was lower in women age 85 years and older than in younger women and higher among women who reported difficulty with ADLs compared with those with only moderate disability.

The level of severity of self-reported pain in the hands or wrists, feet, and back is given in Table 12.4. These data come from participant report of pain using visual analog scales that range from 0 to 10, representing mild (0-3), moderate (4-6), or severe pain (7-10). The scales were presented only to women who stated that they had pain during the month before the interview. Of those with pain, the majority, independent of age and level of disability, had moderate or severe pain. The level of severity of self-reported pain in the knees or hips is given in Table 12.5. These data are based on answers to five pain questions taken from the Western Ontario McMaster Osteoarthritis Index (Bellamy et al., 1988); level of pain is categorized as mild (0-3), moderate (4-6), or severe (7-10) in those who stated that they had pain during both the past year and the month before the interview in their hips and/or their knees. The majority of women who reported current pain in their hips and/or knees had moderate or severe pain when walking on a flat surface, going up and down stairs, and standing upright; however, less than half had moderate or severe pain when sitting or lying down or in bed at night. The proportion of those with current pain who reported moderate or severe pain did not appear to vary with age or level of disability. Of note, however, was the higher proportion of women in the oldest age group and in the group that required help performing ADLs who reported that they did not stand upright, walk on a flat surface, or go up and down stairs. Avoidance of or inability to perform these tasks may lead to an underestimate of the prevalence of and level of severity of complaints of large joint arthritis associated with these weight-bearing activities.

Morning stiffness and swelling with tenderness of the joints were reported less often than joint pain at all sites (Table 12.3). The prevalence of morning stiffness was higher than that of swelling in both the hands or wrists and knees, but not in the feet. This may be attribut-

able to some confusion between dependent edema and joint swelling by some of these women. Both age-specific and disability level-specific patterns of prevalence of morning stiffness and swelling were similar to those for reported pain.

Signs of Arthritis on Physical Examination

Trained nurses performed a standardized examination of the participants' peripheral joints. The wrists and metacarpophalangeal and proximal interphalangeal joints of the hands were examined for tenderness on palpation and pain on motion, soft tissue swelling, and limited range of motion; the distal interphalangeal joints of the hands were examined for tenderness on palpation and pain on motion, bony enlargement, and limited range of motion; the hips were examined for pain on motion; the knees were examined for tenderness on palpation and pain on motion, bony enlargement, crepitus, and angular (varus or valgus) deformity; the feet were examined for the presence of bunions and hammer toes; and functional shoulder rotation was assessed.

Table 12.6 presents the prevalence of abnormalities found on physical examination. The most commonly involved joint group was the knees. Over 80 percent of women had patellofemoral crepitus on flexion and extension of their knees; this sign is the most common physical finding in patients with osteoarthritis of the knee and is one of the clinical features utilized in classifying cases of knee osteoarthritis (Altman et al., 1986). Approximately 35 percent of women had tenderness or pain on motion, 42 percent had bony enlargement of the knees, and 17 percent had either a valgus or varus deformity of the knee. These findings were more common in women with ADL difficulty, especially those needing help with ADLs, than in women with moderate disability. The prevalence of both bony enlargement and angular deformities increased with age in these women.

Abnormalities were found in the feet and hands or wrists in a majority of women. About 70 percent had bunions and 50 percent had hammer toes. The prevalence of both bunions and hammer toes increased with age; hammer toes were slightly more common in women with ADL difficulty than in women with moderate disability. Tenderness on palpation or pain on motion and limitation of joint range of motion in the hands or wrists were present in the majority of women and were slightly more common in women with ADL difficulty than in women with moderate disability. Swelling in the joints of the hands or wrists was present in about one-quarter of women and was found in a higher proportion of women with ADL difficulty than in women with moderate disability.

Almost two-thirds of women were fully capable of functional shoulder rotation; the proportion able to perform this maneuver, however, declined with increasing age and was markedly lower in women who received help with ADLs than in women with only moderate disability. More detailed results of the shoulder rotation assessment are presented in Chapter 4, Table 4.9. Pain on motion of the hips was present in only one-quarter of women and was not related to either age or level of disability.

Lower Extremity Strength

Knee extensor (quadriceps) muscle strength and hip flexor (iliopsoas) muscle strength were determined using a Nicholas Manual Muscle Tester (Model # BK-7454, Fred Sammons, Inc., Burr Ridge, IL), a hand-held dynamometer that measures the peak force required to break an isometric contraction as the examiner applies force against the subject. Tests were conducted with the participant seated comfortably in a hard chair. The dynamometer was placed a few inches above the right ankle between the medial and lateral malleolus for the knee extension test and immediately proximal to the femoral condyles at the distal thigh for the hip flexion test. Partici-

pants were instructed to push against the dynamometer as hard as they could, and the examiner then pushed hard enough to break the contraction.

Results of functional tests of lower extremity muscle strength are shown in Table 12.7; results of tests of upper extremity muscle strength are given in Chapter 4, Tables 4.6 through 4.8. Over three-quarters of these elderly, disabled women were able to complete tests of hip flexor and knee extensor muscle strength; however, the proportion able to perform the tests declined with increasing age and was lower among those with ADL difficulty, particularly among those receiving help with ADLs, than among those with moderate disability.

Among those who completed testing, the mean and median values for both hip flexor strength and knee extensor strength declined with increasing age and were higher among those with moderate disability than women who received help with ADLs. These data support the validity of functional testing performed in the home by trained nurses on older, disabled women.

Summary

As expected, arthritis was the most common condition reported by women in the WHAS. It affected multiple joints and frequently caused knee pain which was most severe going up and down steps. Physical examination confirmed the frequent knee involvement and also clarified the other joints affected. Most often arthritis was managed with medications, although a small proportion had surgical treatment. Symptoms and examination findings in older women with disability provide insight into the relationship of musculoskeletal disease with severity of disability.

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Table 12.1: Percent Prevalence of Self-Reported Arthritis and Surgical Treatment for Arthritis[1,2]

Condition and Treatment	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Self-report of arthritis[4]	76.1	75.4	77.4	74.6	70.0	80.4	76.9
Has a doctor ever told you that you had arthritis?[5]							
Yes	75.1	74.7	76.5	72.6	68.5	79.8	75.5
Are you currently being treated or taking medication for arthritis?							
Yes	42.2	42.5	44.7	34.6	37.7	44.5	45.3
Which type of arthritis do you have?[6]							
Rheumatoid arthritis	11.6	10.1	14.4	8.7	10.2	11.3	15.5
Osteoarthritis or degenerative arthritis	21.8	26.4	19.0	16.1	17.7	24.6	22.7
Some other type	1.9	1.4	2.8	0.9	2.3	1.8	1.3
Don't know	40.8	37.5	41.3	48.9	39.8	42.7	37.4
Any surgery for arthritis[7]	8.4	8.4	9.1	6.6	3.5	11.2	10.8
Hip surgery[8]	2.2	1.9	2.9	1.3	0.4	3.3	3.1
Knee surgery[9]	5.0	5.5	4.7	4.1	2.2	6.8	5.8

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] "Yes" response to either the question about doctor's diagnosis of arthritis or the question about treatment or medication for arthritis.
[5] The question was asked in the screener interview and the presence of the condition was confirmed in the baseline interview.
[6] Categories may not add up to percent reporting arthritis due to rounding.
[7] "Yes" response to "Have you ever had any operations for treatment of your arthritis?"
[8] "Yes" response to either "Was your right hip operated on?" or "Was your left hip operated on?"
[9] "Yes" response to either "Was your right knee operated on?" or "Was your left knee operated on?"

Table 12.2: Percent Prevalence of Other Self-Reported Osteoarticular Conditions[1,2]

Condition and Treatment	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Osteoporosis or thinning of the bones[4]	16.0	14.1	19.4	12.3	16.9	16.0	14.2
Are you currently being treated for osteoporosis?							
Yes	5.6	5.9	6.6	2.1	4.5	6.7	5.1
Bone fractures							
Hip[5]	6.1	3.2	6.3	14.5	3.9	6.9	8.7
Hospitalized during past year for hip fracture[6]	0.4	0.3	0.7	0.3	0.0	0.0	2.6
Compression fracture or collapsed or crushed vertebrae[7]	4.9	2.9	7.0	5.0	3.0	5.6	6.8
Wrist/arm (since age 50)[8]	13.1	10.4	14.6	16.8	12.1	15.0	10.0
Other bones (since age 50)[9]	19.4	17.4	22.4	17.3	16.6	22.1	17.8
Degenerated or herniated disc or spinal stenosis[10]	17.8	19.0	19.3	10.1	12.1	22.9	15.1
Surgery for treatment of degenerated disc or spinal stenosis[11]	0.8	0.8	1.2	0.0	0.3	1.5	0.0

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 5% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question is in the form "Has a doctor ever told you that you had . . . ?"
[5] "Yes" response to "Has a doctor ever told you that you had a broken or fractured hip?" from the screener interview. The presence of the condition was confirmed in the baseline interview.
[6] "Yes" response to "Were you hospitalized for treatment of your broken hip?" and date of most recent hip fracture given in response to "When were you admitted to the hospital?" no more than 365 days prior to date of baseline interview.
[7] "Yes" response to "Has a doctor ever X-rayed you and told you that you had a compression fracture or collapsed or crushed vertebrae?"
[8] "Yes" response to "Since the age of 50, has a doctor ever told you that you had broken or fractured your wrist or arm?"
[9] "Yes" response to "Since the age of 50, has a doctor ever told you that you had broken or fractured any other bones?"
[10] "Yes" response to either "Has a doctor ever told you that you had a degenerated, slipped or herniated disc or sciatica?" or "Has a doctor ever told you that you had spinal stenosis?"
[11] "Yes" response to either "Did you have surgery for treatment of your degenerated, slipped, or herniated disc or sciatica?" or "Did you have surgery for treatment of spinal stenosis?"

Table 12.3: Percent Prevalence of Osteoarticular Symptoms[1,2]

Symptom	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Hands or wrists							
Pain, aching, or discomfort[4]	33.0	36.6	31.7	26.2	27.5	33.7	42.7
Swelling with tenderness[5]	16.0	19.6	15.0	8.4	13.8	13.9	26.7
Morning stiffness[6]	27.7	31.2	26.9	19.7	20.8	27.4	42.8
Pain or stiffness occurred in the past month[7]	56.9	60.4	56.7	47.6	50.2	61.5	58.3
Hips							
Pain, aching, or discomfort[4]	27.7	31.8	25.0	22.9	20.6	33.1	27.1
Morning stiffness[6]	20.9	23.9	20.1	13.8	13.9	25.9	21.2
Pain or stiffness occurred in the past month[8]	38.6	41.8	38.1	30.4	30.7	46.7	32.4
Knees							
Pain, aching, or discomfort[4]	45.9	52.1	43.3	34.7	36.3	51.4	50.4
Swelling with tenderness[5]	23.4	28.8	19.9	17.3	16.0	25.5	33.2
Morning stiffness[6]	34.5	41.1	32.6	20.5	23.5	39.8	42.7
Pain or stiffness occurred in the past month[8]	55.4	59.7	54.7	45.0	45.9	61.3	58.8
Feet							
Pain, aching, or discomfort[4]	34.1	35.9	35.8	24.2	27.9	36.8	39.5
Swelling with tenderness[5]	21.9	23.0	22.7	16.8	18.6	21.0	31.5
Morning stiffness[6]	21.0	24.4	20.7	11.9	14.0	23.4	28.9
Pain or stiffness occurred in the past month[8]	43.2	44.5	45.7	32.9	38.2	46.2	45.4
Lower back							
Pain[4]	42.2	45.8	43.4	28.6	33.2	49.0	42.1

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] "Yes" response to "During the past year, have you had . . . in your . . . on most days for at least one month?"
[5] "Yes" response to "Have you ever had any swelling with aching or tenderness in your . . . on most days for at least six weeks?"
[6] "Yes" response to "Have you ever had stiffness in your . . . when first getting up in the morning on most days for at least six weeks?"
[7] "Yes" response to either "Have you had (this/any) pain in your hands or wrists during the past month?" or "Have you had (this/any) stiffness in your hands or wrists in the last month?"
[8] "Yes" response to either "Have you had (this/any) pain in your . . . during the past month?" or "Has stiffness in your . . . occurred in the past month?"

Table 12.4: Presence and Severity of Pain in Hands or Wrists, Feet, and Lower Back During the Past Month (Percent)[1,2]

Symptom[3]	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[4] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Hands or wrists[5,6]							
No pain reported	49.2	46.8	48.6	58.0	55.7	44.9	48.0
Mild pain (0-3)	14.0	13.4	15.3	12.3	12.2	18.1	6.3
Moderate pain (4-6)	21.9	24.4	20.0	19.6	18.6	23.1	25.3
Severe pain (7-10)	14.9	15.4	16.1	10.1	13.5	14.0	20.3
Feet[5,6]							
No pain reported	58.2	56.9	56.0	67.9	63.6	55.2	55.5
Mild pain (0-3)	10.4	6.9	15.3	7.7	7.7	13.2	8.2
Moderate pain (4-6)	13.9	15.6	12.9	11.8	14.0	14.0	13.6
Severe pain (7-10)	17.4	20.6	15.7	12.6	14.6	17.6	22.8
Lower back[7,6]							
No pain reported	57.8	54.2	56.6	71.4	66.8	51.0	57.9
Mild pain (0-3)	5.3	3.8	7.3	4.8	4.7	6.1	4.4
Moderate pain (4-6)	16.2	19.3	13.5	14.2	15.3	16.8	16.4
Severe pain (7-10)	20.7	22.7	22.6	9.7	13.2	26.1	21.2

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[5] Have you had (this/any) pain in your . . . (during the past month)?
[6] Respondents who answered "Yes" to the question about pain were then asked "Please rate the average pain in your . . . during the past month by giving me a number from 0 to 10, where 0 is no pain and 10 is severe or excruciating pain, as bad as you can imagine."
[7] During the past year, have you had pain in your lower back on most days for at least one month?

Table 12.5: Presence and Severity of Pain in Knees or Hips During the Past Month (Percent)[1,2]

Symptom	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Pain in knees or hips during the past month[4]	65.5	69.5	64.7	56.2	55.8	72.7	65.8
Severity of pain reported during activities:[5]							
Walking on a flat surface[6]							
Doesn't do	0.4	0.0	0.5	1.0	0.0	0.0	2.2
Mild pain (0-3)	20.1	19.5	20.9	19.6	18.9	22.5	15.9
Moderate pain (4-6)	22.3	24.0	22.0	18.1	21.8	24.5	17.2
Severe pain (7-10)	22.5	26.0	21.0	16.5	15.0	25.6	29.9
Going up or down stairs[6]							
Doesn't do	4.1	2.6	4.6	7.4	1.1	4.5	9.8
Mild pain (0-3)	16.5	16.2	16.2	18.5	15.7	17.9	14.5
Moderate pain (4-6)	17.4	16.9	20.1	11.6	19.1	18.5	10.7
Severe pain (7-10)	26.8	33.6	23.2	16.5	19.8	31.4	29.2
In bed at night[6]							
Mild pain (0-3)	33.8	31.5	36.5	33.1	29.7	38.3	29.7
Moderate pain (4-6)	16.2	17.6	15.3	14.7	13.6	17.9	17.1
Severe pain (7-10)	15.4	20.4	12.8	7.3	12.4	16.4	18.6
Sitting or lying down[6]							
Mild pain (0-3)	37.3	36.1	39.2	35.7	33.1	42.9	30.5
Moderate pain (4-6)	16.7	20.7	13.1	14.6	14.2	18.3	17.4
Severe pain (7-10)	11.3	12.4	12.4	5.1	8.1	11.4	17.8
Standing upright[6]							
Doesn't do	0.5	0.2	0.5	1.4	0.0	0.2	2.5
Mild pain (0-3)	27.0	26.5	28.6	24.3	25.7	29.3	23.6
Moderate pain (4-6)	18.7	18.8	18.9	17.7	14.4	23.6	13.7
Severe pain (7-10)	19.1	24.0	16.3	12.0	15.4	19.6	25.3

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 3% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] "Yes" response to at least one of the following questions: (1) Have you had (this/any) pain in your knees during the past month? and (2) Have you had (this/any) pain in your hips during the past month?
[5] Categories for each item may not add up to percent reporting pain due to (1) rounding (2) level of severity not reported.
[6] Respondents who reported pain in knees or hips during the past month were asked "Please rate the average pain in your (knees) (and) (hips) during the past month by giving me a number from 0 to 10, where 0 is no pain and 10 is severe or excruciating pain, as bad as you can imagine. How would you rate the pain when you are . . . ?"

Table 12.6: Percent Prevalence of Limb and Joint Abnormalities on Examination[1,2]

Examination Finding	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Either wrist or any hand joint							
Tender on palpation or pain on passive motion	52.5	53.3	52.1	51.3	47.6	55.1	55.3
Swelling	26.6	24.7	30.5	21.5	22.1	28.0	32.0
Decreased range of motion	51.2	48.2	50.1	62.9	47.7	50.7	59.8
Shoulder rotation (internal and external)[4]							
Fully able to do	64.5	69.1	63.3	54.2	74.8	66.2	38.2
Partially able	29.2	24.6	30.8	38.5	22.5	30.5	39.6
Unable to do at least one rotation[5]	6.3	6.4	5.9	7.3	2.7	3.3	22.2
Either hip							
Pain on passive motion	24.1	27.3	21.2	22.4	21.2	26.9	22.2
Either knee							
Crepitus	83.3	83.4	82.2	86.1	84.8	81.9	84.1
Tender on palpation or pain on passive motion	35.3	37.0	31.9	39.9	24.7	38.0	49.9
Bony enlargement	42.1	34.3	47.0	52.0	31.0	44.6	58.4
Angular deformity[6]	16.6	15.2	17.6	18.2	10.9	20.1	18.8
Either foot							
Hammer toes	49.4	44.6	51.9	56.8	47.9	49.2	52.9
Bunions	69.7	64.0	72.6	78.5	69.0	71.1	67.0

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.
[5] Of either shoulder, internal or external.
[6] Observed varus or valgus of greater than 5 degrees.

Table 12.7: Lower Extremity Muscle Strength Tests[1]

Test Result	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[2] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Knee extensor muscle test							
Number completing exam[3]	826	327	256	243	305	397	124
Percent completing exam	83.1	84.4	82.6	80.7	89.1	84.1	67.8
Muscle strength (kg)[4]							
Mean	13.3	14.5	12.7	11.6	14.2	13.3	11.0
5th percentile	5.6	6.5	4.5	4.9	6.8	5.9	3.8
25th percentile	9.8	10.7	8.9	8.9	10.5	9.8	7.8
50th percentile	12.9	14.8	12.8	11.4	13.8	12.6	10.8
75th percentile	16.4	18.1	15.4	14.9	17.5	16.4	14.1
95th percentile	21.7	22.9	21.9	20.1	22.6	21.7	17.8
Hip flexion muscle test							
Number completing exam[3]	781	316	239	226	305	361	115
Percent completing exam	79.0	81.9	77.6	74.7	89.4	77.0	63.2
Muscle strength (kg)[4]							
Mean	11.9	12.9	11.4	10.0	12.3	12.0	10.2
5th percentile	4.7	5.4	4.4	3.9	4.9	4.9	2.3
25th percentile	8.1	9.3	7.8	7.3	8.6	8.1	7.2
50th percentile	11.2	12.1	11.5	9.6	11.8	11.2	9.2
75th percentile	14.6	16.1	14.2	13.1	15.4	14.5	12.2
95th percentile	20.6	22.6	20.7	18.4	21.8	20.2	19.0

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[3] Defined as completing two trials on each leg.
[4] Highest of the four scores (two trials on each leg).

13

Neurological Conditions

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This chapter reports descriptive data on three neurologic conditions that are often associated with disability in older adults: stroke, Parkinson's disease, and peripheral neuropathy. Data are also included on balance problems and falls, conditions often caused by impairments of neurological control (Horak et al., 1989; Massion, 1992; Tinetti et al., 1988).

Many chronic conditions affecting the neurological system become more prevalent with advancing age (Kurtzke, 1985; Morgante et al., 1992; Schoenberg et al., 1985). Stroke is a leading cause of death in older women and is also a leading cause of disability in activities of daily living (ADLs) and upper extremity tasks in this age group (Eaker et al., 1993; Ettinger et al., 1994). More than 60 percent of elderly women surviving a stroke (Eaker et al., 1993) and over two-thirds of patients affected by Parkinson's disease (Peterson et al., 1988; Sutcliffe et al., 1985; Wade et al., 1986) have significant disability in ADLs. The overall contribution of stroke to disability in the older population is likely to increase in the future, since age-specific incidence rates are stable while case-fatality rates have been progressively declining in the past two decades (Baruch and Wagener, 1992). In spite of this situation, there are few epidemiologic data on the specific characteristics of neurologic diseases associated with functional deterioration.

The study of neurologic conditions in old age is particularly complex, in part because the boundary between normal aging and pathological changes of the brain is difficult to identify. Furthermore, the full impact of neurologic diseases often cannot be easily determined owing to the multifaceted clinical expression of these conditions.

One of the basic approaches of the Women's Health and Aging Study (WHAS) is the development of *a priori* models of the causal sequences linking diseases (e.g., arthritis), integrated physiologic abilities (e.g., muscular strength of the knee extensor muscles), performance in standard physical tasks (e.g., rising from a chair), and disabilities in daily tasks (e.g., shopping). This framework may help delineate links between specific pathophysiologic mechanisms and disability in selected chronic diseases such as arthritis or respiratory conditions. However, these relationships may be considerably more complex in the presence of pathologic conditions affecting the central nervous system, which may cause problems with a wide range of physical functions, cognition, and other specific cortical functions such as speech, body image, and control of movement. Stroke, for example, may affect any or all ADL and instrumental ADL functions, depending on the location and the size of the lesion.

Stroke

History of stroke was ascertained by self-report and will be validated by review of medical records and physician questionnaires during a later phase of the study. The data reported here (Table 13.1) are based only on self-report and

should be considered with caution, since previous studies have shown that more than one-fifth of self-reported cases are not confirmed when medical records are reviewed (Anderson et al., 1988; Heliovaara et al., 1993). However, even taking into account this possible overestimation, the prevalence of stroke among WHAS participants is substantially higher than in other populations of the same age (Kurtzke, 1985). Since eligibility for the WHAS was based on disability, this differential is consistent with the major role that stroke plays as a cause of disability in older women.

Overall, 15 percent of participants reported a stroke and 73 percent of these participants said they had been hospitalized for a stroke (Table 13.1). The prevalence of stroke, the number of strokes experienced, and the percentage of strokes that resulted in hospitalization were independent of age but strongly associated with disability.

More than 90 percent of the subjects who reported a stroke stated that it occurred more than 6 months before the interview (data not shown). Thus, in the vast majority of these subjects, impairments caused by stroke can be considered stable, at least as far as motor function is concerned (Ernst, 1990; Jongbloed, 1986). Residual symptoms resulting from a stroke are shown in Table 13.2. More than 46 percent of the subjects who reported a previous stroke did not have any residual motor impairment at the time of the interview. This result confirms previous reports on prevalence of impairments in women surviving a stroke (Pinsky et al., 1990). Although the prevalence of motor symptoms did not change substantially with age, it was higher among women receiving help with ADLs than among those with less disability.

The percentage of subjects reporting any residual non-motor symptoms—including impairment in speech, abnormal somatic sensation dizziness, loss of balance, and vision problems—was higher than the percentage of those who reported residual motor impairment. Overall, the prevalence of non-motor symptoms was inversely related to age. There was no relationship of non-motor symptoms in general with disability, although the prevalence of several specific speech symptoms increased with increasing disability. These data suggest that motor symptoms and changes in speech may be the most important predictors of severity of disability caused by a stroke. The lower prevalence of non-motor symptoms among older subjects is probably the result of selective survival of persons with less severe strokes.

Parkinson's Disease

The top of Table 13.3 shows the percentage of individuals reporting a history of Parkinson's disease and current treatment for Parkinson's disease. This approach to ascertainment likely underestimates the prevalence of this condition since a significant proportion of people affected by early-stage Parkinson's disease or parkinsonism will not have been identified. Overall, 2.4 percent of participants reported a history of Parkinson's disease or were being treated, which is similar to the prevalence rates that have been reported in other studies of community-dwelling populations in the same age group (Morgante et al., 1992; Shoenberg et al., 1985). Women in the oldest age group were slightly more likely to have a history of Parkinson's disease or medication use. Evidence of Parkinson's disease was present in 7 percent of women who received help with ADLs, compared with much smaller proportions of women with lesser degrees of disability.

The prevalence of symptoms that typically affect parkinsonian patients was assessed with a standardized questionnaire (Tanner et al., 1990, Table 13.3). The diagnostic value of this questionnaire has been verified in the general population (Tanner et al., 1994). Most of the parkinsonian symptoms assessed by the questionnaire showed a high prevalence in this cohort and a strong relationship with level of disability. However, the specificity of some of these symptoms for a diagnosis of Parkinson's disease or parkinsonian syndromes is poor in this population,

since many items included in the questionnaire ascertain physical problems such as "having trouble rising from a chair" or "poor balance" that may also be caused by more prevalent chronic diseases.

Peripheral Neuropathy

Several studies have documented that the function of the peripheral nervous system, especially sensory function in the distal extremities, declines with increasing age (Falco et al., 1994; Skinner et al., 1984). However, whether aging itself has an independent effect on decline in peripheral nerve function has been questioned (Letz and Gerr, 1994; Paradiso et al., 1989). In the WHAS, the presence of peripheral neuropathy was investigated by asking the participants about abnormalities in somatic sensation and by objectively measuring the threshold for vibratory sensation in the lower extremities (Maser et al., 1989).

The percentage of subjects reporting abnormal somatic sensation decreased with age and increased with level of disability (Table 13.4). A substantially greater prevalence of peripheral neuropathy in those receiving help with ADLs was indicated by the response to the question, "Have you ever burned yourself without feeling pain?" which assesses extremely severe loss of somatic sensation.

Vibratory threshold was measured in the lower extremities using the Vibratron II apparatus (Physitemp Instrument, Inc., Clifton, NJ). This test determines the sensitivity of the large toe in detecting a very small vibratory stimulus as an indicator of large-fiber peripheral nerve function. The method employed a two-alternative forced-choice procedure, in which the woman was required to indicate which of the two periods of "stimulation" applied on the lower surface of the right great toe was accompanied by an actual vibration. The intensity of the stimulus was slowly reduced by approximately 10 percent at each trial until the participant could no longer discern the vibration. When the participant made her first error, the intensity was increased by 10 percent. This process continued, with correct trials resulting in a lowering of intensity and errors resulting in an increasing intensity until a total of five errors were made. The vibration threshold was determined by identifying the five errors and the five lowest correct scores, eliminating the highest and the lowest, and calculating the mean of the remaining eight scores. This scoring method was derived from the protocol developed by Arezzo and colleagues for the Physitemp Instrument, adapted to single-transducer equipment and validated in a series of patients affected by diabetes (Maser et al., 1989). According to this protocol, the test should be considered valid only if 18 or fewer trials are needed and not more than one error is encountered in the first 8 trials.

Only slightly more then 60 percent of the subjects met the above criteria for a valid test, and the percentage not meeting the criteria increased markedly with both age and level of disability. To present a more complete picture of the WHAS population, the measurements obtained from these women are included in the results presented in Table 13.5. Mean vibration threshold increased with age and level of disability, and the entire distribution of scores for vibration threshold was shifted higher with increasing age and level of disability, confirming previous findings (Skinner et al., 1984).

Falls and Balance-Related Problems

Falls result in physical injury, decline in function, serious morbidity, and institutionalization (Cummings and Nevitt, 1994; Kiel et al., 1991). It has recently been demonstrated that many falls can be prevented by multifactorial intervention programs (Tinetti et al., 1994).

Since many studies have shown that a disturbance in the control of balance is one of the most frequent cause of falls (Tinetti et al., 1988), both conditions are discussed in this section. The control of balance requires the coordinated function

of multiple mechanisms and the integrity of the musculoskeletal apparatus (Lord et al., 1994). It is widely recognized that instability in older adults is frequently explained by subclinical deterioration in several subsystems (Horak et al., 1989; Tinetti et al., 1988). The detection of these relatively small impairments requires techniques that cannot be easily implemented in an epidemiologic study. However, even simple performance measures of functioning have been shown to be powerful predictors of falls (Nevitt, 1989).

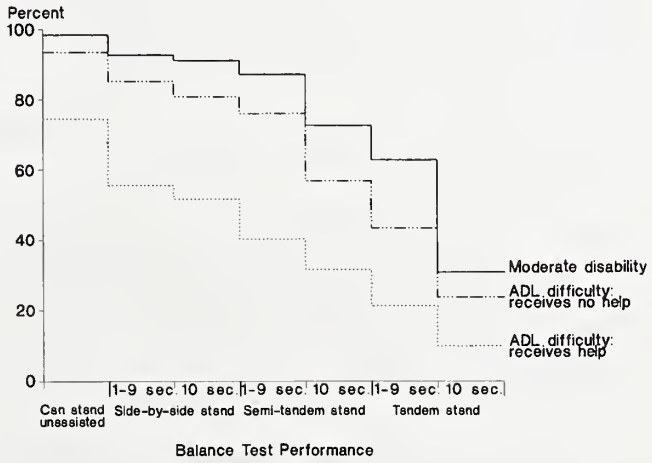
One-third of WHAS participants reported falling in the past year, and 15 percent fell two or more times (Table 13.6). Among those receiving help with ADLs, nearly half fell in the previous year, and nearly a quarter fell two or more times. Almost half the subjects (45 percent) reported that they had been "anxious or worried or afraid" of falling in the past 12 months, and nearly 20 percent reported limiting their activities some or most of the time because of fear of falling. The percentage of subjects reporting a history of falls, fear of falling, and limitation in activities because of fear of falling was not substantially different in the three age groups, although women age 85 years and older were twice as likely as women age 65 to 74 years to limit their activities most or all of the time because of fear of falling (15 percent versus 7 percent). There was a strong association of fall history and fear of falling with level of disability. One-third of women receiving help with ADLs reported limiting activities some or most of the time because of fear of falling.

Table 13.6 also shows self-report of dizziness, which is quite common in this cohort, and fainting, which occurred in about 5 percent of participants in the past year. The percentage of participants who fainted was very low compared with the percentage who reported falls: this is not unexpected as the main cause of most falls is a dysfunction in the control of balance not associated with loss of consciousness.

Table 13.7 presents data on self-perception of poor balance related to a range of situations in daily life. Again, while an age effect is clearly present, there is a strong association of balance problems with level of disability.

The strong association between balance and disability is further demonstrated in Figure 13.1, which shows performance according to disability level on a series of tests investigating balance, organized in a hierarchical scale (described in detail in Chapter 4). This figure classifies the ability to maintain balance into seven progressively more demanding levels. The percentage of subjects totally unable to perform the entire set of tests, as well as the percentage of subjects unable to perform each level of the tasks, increased with level of disability. Note that in this population self-perception of problems with balance is only modestly associated with age, while performance in balance is highly age-dependent (Table 4.2). This fact suggests the development of lower expectations with aging regarding the ability to maintain stable balance or the development with aging of adaptive behavior that obscures the objective capacity to maintain stable balance.

Figure 13.1: Performance on Balance Tests by Level of Disability[1]



(Women's Health and Aging Study, physical assesssment, 1992-1995)

[1]Based on weighted data.

Summary

Conditions that affect the central and peripheral nervous systems are important causes of disability in older persons. Specific diseases (stroke and Parkinson's disease) and conditions (parkinsonian symptoms, peripheral neuropathy, balance problems, and falls) related to the nervous system are common in older disabled women and have a higher prevalence in women with the most severe disability.

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Table 13.1: Percent Prevalence of Self-Reported Stroke[1,2]

Condition and Treatment	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
All Participants	(N = 1002)	(N = 388)	(N = 311)	(N = 303)	(N = 343)	(N = 478)	(N = 181)
Has a doctor ever told you that you had a stroke?[4]							
Yes	14.7	15.5	14.4	12.9	10.2	11.4	32.8
Participants Reporting Stroke	(N = 143)	(N = 61)	(N = 45)	(N = 37)	(N = 34)	(N = 55)	(N = 54)
Have you ever been hospitalized for a stroke?							
Yes	73.2	75.6	74.5	60.1	68.5	71.1	78.3
How many strokes have you had?[5]							
One	64.0	67.3	60.9	62.1	74.3	60.3	61.1
More than one	36.0	32.7	39.2	37.9	25.7	39.7	38.9

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 5% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question was asked in the screener interview and the presence of the condition was confirmed in the baseline interview.
[5] Categories may not add up to 100% due to rounding.

Table 13.2: Percent Prevalence of Current Residual Symptoms Resulting from a Stroke[1,2,3]

Stroke Symptom	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[4]	Receives No Help	Receives Help
Participants Reporting Stroke[5]	(N = 143)	(N = 61)	(N = 45)	(N = 37)	(N = 34)	(N = 55)	(N = 54)
Any motor symptoms (weakness)[6,7]	53.3	56.8	50.3	50.1	41.4	45.3	68.9
Left side only	31.8	34.9	27.8	33.4	21.4	31.6	38.9
Right side only	15.3	16.0	15.9	11.1	12.9	8.2	23.7
Both sides	6.2	6.0	6.7	5.7	7.0	5.5	6.3
Any non-motor symptoms	62.7	68.2	61.6	47.2	60.0	64.7	62.5
Any effect on speech	24.8	29.8	21.0	18.7	19.5	26.9	26.1
Loss or change in speech[8]	20.1	21.4	20.6	14.3	16.1	17.6	25.2
Slurred speech[9]	10.9	10.7	12.2	7.6	6.1	7.3	17.6
Wrong words came out[10]	11.9	12.6	11.5	10.3	13.5	8.4	14.3
Words would not come out[11]	14.8	13.3	18.6	8.8	13.5	18.3	12.3
Could not think of right words[12]	11.0	13.0	7.3	15.6	6.0	18.9	6.7
Numbness, tingling, or loss of feeling[13]							
Left side only	15.8	18.1	16.9	4.9	17.1	12.4	18.3
Right side only	10.4	9.9	11.7	8.2	3.4	8.8	16.4
Both sides	1.9	1.6	2.5	1.3	4.2	2.5	0.0
Dizziness, loss of balance, or sensation of spinning[14]	31.2	30.4	34.4	24.5	25.2	35.7	30.7
Loss or blurring of vision, complete or partial[15]							
Left eye only	7.6	5.0	11.0	5.9	10.3	6.9	6.6
Right eye only	4.0	3.4	4.6	3.8	3.4	0.0	7.9
Both eyes	8.6	4.8	13.6	6.1	9.8	4.7	11.4

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 5% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Responses are included in this table if the participants reported experiencing the symptom as a result of a stroke and answered "Yes" to "Do you still have this problem?"
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[5] Responded "Yes" to "Has a doctor ever told you that you had a stroke?"
[6] Sum of rates for categories may not equal rate for any motor symptoms due to rounding.
[7] Weakness in side of the body is included if the participant answered "Yes" to "After (any of) your stroke(s), did you have weakness in your [part of body]?"
[8] Did you have a sudden loss or change in speech as a result of (any of) your stroke(s)?
[9] Your speech was slurred like you were drunk.
[10] You could talk, but the wrong words came out.
[11] You knew what you wanted to say, but the words would not come out.
[12] You could not think of the right words.
[13] Did you have sudden numbness, tingling, or a loss of feeling in either side of your body, including your face, arm, or leg, as a result of any stroke?
[14] Did you have sudden dizziness, loss of balance, or a sensation of spinning as a result of a stroke?
[15] After (any of) your stroke(s), did you have sudden loss or blurring of vision, either complete or partial?

Table 13.3: Percent Prevalence of Self-Reported Parkinson's Disease and Parkinsonian Symptoms[1,2]

Condition and Treatment	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Has a doctor ever told you that you had Parkinson's disease?[4]							
Yes	2.3	2.3	2.4	2.4	1.1	1.6	7.0
Are you currently being treated for Parkinson's disease?							
Yes	1.9	2.0	1.7	2.3	1.1	1.3	5.4
Current use of L-dopa or Sinemet[5]	1.6	1.8	1.0	2.8	0.6	1.3	4.6
Any of the above[6]	2.4	2.3	2.4	3.2	1.1	1.8	7.0
Parkinsonism Questionnaire[7]							
Do you have trouble rising from a chair?							
Yes	50.8	50.1	48.9	57.7	23.5	61.8	76.8
Is your handwriting smaller than it once was?							
Yes	22.6	19.3	24.7	26.6	19.1	21.1	33.7
Do people tell you that your voice is softer than it once was?							
Yes	9.3	8.5	10.2	9.0	9.1	8.9	10.7
Is your balance poor?							
Yes	56.4	52.0	59.9	60.0	45.7	58.7	72.2
Do your feet suddenly seem to freeze in doorways?							
Yes	10.2	8.6	11.8	10.7	5.9	10.5	18.4
Do people tell you that your face seems less expressive than it once did?							
Yes	8.1	8.8	8.4	5.4	6.9	7.1	13.6
Do your arms or legs shake?							
Yes	16.0	13.2	19.2	15.8	13.2	12.8	30.8
Do you shuffle your feet or take tiny steps when you walk?							
Yes	23.3	19.8	23.2	34.1	14.9	23.5	40.5
Have you ever taken L-dopa or Sinemet?							
Yes	2.7	2.8	2.5	2.8	0.3	2.2	8.8

(Women's Health and Aging Study, screening and baseline interviews, 1992-1995)

[1] All variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] The question was asked in the screener interview and the presence of the condition was confirmed in the baseline interview.
[5] Interviewers asked participants: "May I see the medicine bottles, containers or bags for all of the medicines that you have taken or used in the last two weeks? Please include medicine prescribed by a doctor and medicine not prescribed by a doctor." Evidence of current use of L-dopa or Sinemet is based on the interviewer's notation of at least one of these among the drugs shown.
[6] "Yes" to the question about having Parkinson's disease, or evidence of current use of L-dopa or Sinemet.
[7] Tanner CM, et al. (1990). A brief screening questionnaire for parkinsonism. *Ann Neurol* 28:264-268.

Table 13.4: Percent Prevalence of Abnormal Peripheral Sensation[1,2]

Symptom	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Abnormal peripheral sensation[4]	9.6	10.7	9.4	6.9	3.6	11.4	16.7
Is your abnormal sensation found in your . . . ?							
A. Legs or feet Yes	6.7	8.1	6.1	4.3	2.6	8.6	10.0
B. Arms or hands Yes	8.2	9.6	7.8	4.9	3.2	9.6	14.5
If yes to both A and B	5.4	7.0	4.5	2.9	2.2	6.8	8.2
Have you ever burned yourself without feeling pain? Yes	1.7	2.1	1.6	0.8	1.1	1.2	4.4

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Includes positive response to any of the items below.

Table 13.5: Vibration Sensitivity Test[1,2]

Test Result	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Number completing exam	898	364	287	247	320	430	148
Percent completing exam	91.6	94.2	92.3	81.9	94.3	92.4	83.6
Vibration threshold (microns)[4,5]							
Mean	4.1	3.6	4.2	5.3	3.6	4.3	4.5
5th percentile	1.2	1.0	1.4	2.0	1.1	1.5	1.2
25th percentile	2.5	2.2	2.6	3.7	2.2	2.8	2.9
50th percentile	3.9	3.1	3.9	5.0	3.2	4.2	4.5
75th percentile	5.5	4.7	5.2	6.9	4.7	5.9	6.1
95th percentile	8.6	7.9	8.5	9.2	8.3	8.9	8.9

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] Data obtained by using Vibratron II (Physitemp Instrument).
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Maser RE, et al. (1989). Measuring diabetic neuropathy. Assessment and comparison of clinical examination and quantitative sensory testing. *Diabetes Care* 12(4):270-275.
[5] The method for calculating vibration threshold is described in the text.

Table 13.6: Percent Prevalence of Dizziness, Fainting, Falls and Fear of Falling[1,2]

Symptom	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Do you ever feel dizzy or light-headed after standing up?							
Yes	38.6	39.8	37.3	39.0	35.1	38.7	45.7
Have you fainted during the past year?							
Yes	5.2	4.1	5.9	6.8	5.3	4.6	6.6
Have you fallen in the past 12 months?[4]							
Yes	34.0	30.3	36.5	38.2	26.9	34.4	47.7
Number of falls[5,6]							
1	18.6	15.3	21.1	22.0	15.3	19.0	24.5
2 or more	15.1	15.0	15.0	15.6	11.6	14.9	23.1
In the past 12 months, have you been anxious or worried or afraid you might fall?							
Yes	45.2	44.9	44.1	49.2	32.8	50.9	55.3
Limitation in activities because of fear of falling[7,8]							
No	24.1	24.6	23.6	24.1	22.1	27.4	19.3
Rarely	2.3	3.2	1.9	1.1	1.0	3.5	1.9
Some of the time	9.6	10.1	9.5	8.6	5.4	10.3	16.5
Most or all of the time	9.2	7.1	9.2	15.4	4.3	9.8	17.5

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Falling includes falling on the ground or at some other level, such as a chair.
[5] How many times have you fallen in the last 12 months?
[6] Categories may not add up to percent reporting falls due to (1) rounding (2) number of falls not reported.
[7] Do you ever limit your activities, for example, what you do or where you go, because you are afraid of falling? Do you limit your activities because of a fear of falling . . . ?
[8] Categories may not add up to percent afraid of falling due to (1) rounding (2) limitation in activities not reported.

Table 13.7: Percent Prevalence of Balance Problems During Daily Activities[1,2]

Symptom[3]	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[4] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Problem keeping balance when Walking on a level surface[5]							
Always, very often or often	18.9	15.5	18.7	29.5	10.2	18.8	37.2
Sometimes	43.4	43.1	44.0	42.8	44.3	45.3	36.6
Never	36.4	40.2	36.0	26.1	45.5	35.4	20.2
Doesn't do	1.3	1.2	1.3	1.6	0.0	0.6	6.0
Dressing while standing[5]							
Always, very often or often	19.6	16.7	19.6	27.9	9.6	20.4	38.4
Sometimes	35.0	36.5	35.6	29.0	34.0	35.7	35.2
Never	43.7	45.4	43.1	40.4	56.4	41.9	22.0
Doesn't do	1.7	1.3	1.7	2.8	0.0	2.0	4.5
Standing with your eyes closed, such as standing in the shower[5]							
Always, very often or often	18.8	17.3	18.2	24.7	11.2	17.4	38.8
Sometimes	25.5	24.7	28.5	19.8	24.8	27.5	21.3
Never	48.9	52.3	46.5	45.1	60.8	47.5	27.5
Doesn't do	6.8	5.7	6.8	10.3	3.2	7.6	12.4
Walking down stairs[5]							
Always, very often or often	21.8	21.8	22.1	21.2	12.4	23.7	36.7
Sometimes	23.7	26.0	22.6	19.8	26.6	23.1	18.9
Never	49.8	50.6	50.0	47.1	59.2	49.2	31.5
Doesn't do	4.7	1.7	5.3	11.9	1.8	4.0	12.9

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 5% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] Categories for each item may not add up to 100% due to rounding.
[4] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[5] The question is in the form ". . . please tell me if you have any problem with keeping your balance when you are . . ."

14

Vision and Hearing

Gary S. Rubin, Marcel E. Salive

Both vision and hearing impairment increase dramatically with advancing age. The Baltimore Eye Survey (Tielsch et al., 1990) reported crude prevalence rates of visual impairment (acuity less than 20/60 in the better eye) of 0.6 percent for Whites and 1.0 percent for Blacks age 40 to 49 years and 2.1 percent for Whites and 6.0 percent for Blacks age 70 to 79 years. Data from three communities in the Established Populations for Epidemiologic Studies of the Elderly (EPESE) indicate a vision impairment rate of 8.2 percent for persons age 71 to 74 years, increasing to 22.2 percent for those age 80 to 84 years (Salive et al., 1992). Prevalence rates based on self-report, such as the data from the National Health Interview Survey (NHIS), are comparable (Havlik, 1986). There are few recent data on objectively determined hearing loss, but data based on self-report indicate that hearing disorders are among the five most common chronic conditions in the U.S. population age 65 years and older (Collins, 1993). Twenty-six percent of adults age 65 to 74 years report deafness or other hearing impairment, and the prevalence increases to 37 percent in those 75 years and older.

Several population-based studies have found that sensory impairment is strongly associated with physical disability among older adults. Cross-sectional analyses of survey data from the NHIS (Havlik, 1986), the Massachusetts Health Care Panel Study (MHCPS; Jette and Branch, 1985), and the Longitudinal Study of Aging (LSOA; Rudberg et al., 1993) showed that persons age 65 years and older who reported visual impairment were more likely to have difficulty with activities of daily living (ADLs). Hearing impairment was not significantly or independently associated with disability in the MHCPS or LSOA. Several European studies (Bergman and Sjostrand, 1992; Carabellese et al., 1993; Hakkinen, 1984; Thompson et al., 1989) concluded that visual impairment measured by visual acuity was associated with a lack of self-sufficiency in the home and difficulty with daily tasks. Hearing impairment, assessed with a speech recognition task, was also associated with decreased self-sufficiency in the Italian study (Carabellese et al., 1993). Finally, visual impairment (Dunn et al., 1992; Gerson et al., 1989; Grisso et al., 1991) and hearing impairment (Dunn et al., 1992; Gerson et al., 1989) were both significant risk factors for balance problems and falls, especially for older women.

Longitudinal studies have had less consistent findings. A 2-year followup of participants in the LSOA showed no association between visual impairment—defined as the presence of an eye disease or "trouble seeing"—and the progression of physical disability (Harris et al., 1989). However, data from a 4-year followup of the LSOA showed an increased risk for progression of disability in participants with visual impairment, independent of other chronic conditions. A 5-year followup of the MHCPS cohort found that change in ability to perform daily activities was not related to self-reported change in vision. These discrepancies may be due, in part, to the use of self-report rather than objective measures of visual impairment. Among persons initially free of mobility or ADL limitations in the EPESE population, se-

verely impaired visual acuity was associated with a threefold higher incidence of mobility and ADL limitations over 15 months, independent of diabetes and stroke (Salive et al., 1994).

In the Women's Health and Aging Study (WHAS), both vision and hearing were assessed by questionnaire and using objective tests. This chapter describes the test procedures and provides the distribution of the test results and questionnaire responses as they relate to age and disability status.

Vision Questionnaire and Acuity Test

As part of a comprehensive medical questionnaire, all participants were asked about current and previous eye conditions. Use of eyeglasses and ability to see well enough to perform several everyday visual tasks was also queried. The questions are listed in Tables 14.1 and 14.2.

Visual acuity was tested with the Goodlite Portable Eye Chart (Model A with LD-10 translucent acuity card). The Goodlite Chart is small and lightweight and contains its own source of standardized illumination. The LD-10 chart uses the Sloan letter set, which has been recommended by the National Academy of Sciences/National Research Council Committee on Vision (National Academy of Sciences, 1980). The test was administered in a darkened room with the participant wearing her customary glasses used for viewing distant objects. If she used bifocals or trifocals, the participant was instructed to view through the segment used for distance vision (usually the top). All testing was done with both eyes together, that is, binocularly. The test distance was initially set at 10 feet, but if the participant was unable to read the largest letters at this distance, the chart was placed 5 feet away and, if necessary, 2.5 feet away. The acuity test was administered in a "forced-choice" fashion; that is, the participant was instructed to provide a letter response for each target and to guess if she was uncertain. Testing proceeded until at least 75 percent of the targets on a single row were missed. This forced-choice procedure has been demonstrated to yield more reliable data than procedures that allow the participant to decide when to terminate the test (Rubin, 1988). In scoring the acuity test, credit was given for each letter correctly identified (Bailey et al., 1991). Although the letter size decreases on each line by a constant 0.1 log units (26 percent) from the preceding line, the number of letters per line increases down the chart in a variable manner. Therefore, the credit awarded for each letter was 0.1 log units divided by the number of letters on that line. The total score was given as an acuity measure in logMAR ($\log_{10}$ minimum angle of resolution) units. All analyses were performed with logMAR units, but the logMAR values were converted to the more familiar Snellen fraction (e.g., 20/20) for reporting purposes. The test is capable of measuring acuities ranging from 1.4 logMAR (20/500) for zero letters correct at 2.5 feet to -0.9 logMAR (20/16) for all letters correct at 10 feet.

Vision Results

Table 14.1 shows the percentage of participants reporting a history of ocular conditions. Cataract was the most common condition, but the question did not separate those with current cataract from those who had undergone cataract surgery before the study. Cataract, macular degeneration, and eye injury were reported by a larger percentage of participants in the age group 85 years and older than in the younger age groups. Prevalence of glaucoma and diabetic retinopathy did not increase with age.

The vast majority of participants (95 percent) reported wearing eyeglasses at least sometimes or for particular tasks such as reading or driving, and 82 percent wore them for the vision test. Table 14.2 lists the percentage of participants who reported difficulty with everyday visual tasks. The most frequently reported problem was blurry vision (37 percent) followed by difficulty reading a newspaper (13 percent). Difficulty reading a newspaper was more common among

participants who received help with ADLs (22 percent) than among those with lower levels of disability (10 to 11 percent).

Visual acuity scores are presented in Table 14.3. Twenty-three percent of participants had 20/20 acuity or better, while fewer than 2 percent would be considered legally blind (acuity less than 20/200). Using the World Health Organization definition of visual impairment—visual acuity less than 20/60—8 percent would be considered at least moderately visually impaired. This percentage increased with age and was higher in those receiving help with ADLs than in the remainder of the cohort.

Hearing Questionnaire and Audiometry

A brief hearing questionnaire was administered, including items from the Hearing Handicap Inventory for the Elderly—Screening Version (Ventry and Weinstein, 1982). Items included in the hearing questionnaire are listed in Table 14.4. Participants were also asked about their use of hearing aids.

Hearing loss was assessed with the Welch Allyn Audioscope3. The instrument combines an otoscope with a handheld audiometer and has been shown to provide accurate and efficient early detection of hearing loss (Lichtenstein et al., 1988). The Audioscope3 provides screening at 1,000, 2,000, 4,000, and 500 Hz, respectively, with a 40 dB tone. To the extent possible, the test was administered in a quiet area of the participant's home. The Audioscope3 was fitted with one of three ear speculae, the largest that would fit comfortably into the ear canal, and the built-in otoscope was used to look at the tympanic membrane. The presence of cerumen that blocked the tympanic membrane was noted.

Before testing, a 1,000 Hz practice tone was delivered at 60 dB. This was followed by four screening tests, two for each ear, alternately, beginning with the left ear. The participant was instructed to raise her hand each time she heard a tone and put her hand down when the tone stopped. The test was scored as pass/fail at each tone tested; the participant had to fail both trials to fail that frequency for a given ear. Hearing impairment was defined based on the criteria of Lichtenstein et al. (1988).

Hearing Results

Results from the hearing questionnaire are shown in Table 14.4. Nine percent of the participants used a hearing aid, with a dramatic increase with age, from 5 percent of those age 65 to 74 years to 23 percent of those age 85 years and older. While 9 percent of respondents reported that hearing difficulty hampered their personal or social life, 46 to 51 percent reported difficulty with specific tasks such as hearing conversation when there is a radio or TV on in the room or when the person is speaking in a whisper.

The prevalence of hearing impairment, shown in Table 14.5, was much higher than visual impairment. Overall, 39 percent of participants were classified as hearing impaired, with a 40 dB hearing loss at 1,000 or 2,000 Hz in both ears or at 1,000 and 2,000 Hz in a single ear, and 33 percent were bilaterally impaired. The percentages increased markedly with age: 72 percent of women age 85 years and older showed hearing impairment, and 67 percent showed bilateral hearing impairment. Because of the strong age gradient in rates of hearing impairment, disability-specific rates of impairment were age-adjusted. After adjusting for age, hearing impairment was not strongly associated with disability status.

Summary

The prevalence of vision and hearing impairments was considerable, as would be expected among older women with moderate to severe functional limitations and disability. In this cross-sectional examination, impaired vision appeared to be related to both age and disability,

while hearing impairment was related primarily to age. In comparing the frequency of vision and hearing impairment from this study with that reported in previous studies, it should be noted that visual acuity was measured binocularly with glasses and hearing impairment was measured without a hearing aid.

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Table 14.1: Percent Reporting a History of Ocular Conditions[1,2]

Condition	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85+ (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Has a doctor ever told you that you had . . . ?							
Glaucoma or suspected glaucoma	15.9	15.1	17.0	15.3	17.2	14.1	18.4
Cataract[4,5]							
One eye only	27.7	23.7	28.8	36.0	28.9	28.1	23.9
Both eyes	31.6	22.0	38.9	40.2	31.2	34.0	26.1
No cataract	40.7	54.3	32.2	23.8	39.9	37.9	50.0
Diabetic retinopathy or eye disease from diabetes	3.3	4.8	2.5	1.1	3.2	2.1	6.9
Macular degeneration or age related maculopathy	4.0	1.9	4.4	9.0	4.7	3.8	3.1
An eye injury which permanently reduced your ability to see	4.7	5.0	3.8	6.0	4.7	4.7	4.6
Double vision	4.5	3.4	5.6	4.9	4.0	4.1	6.7

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Constructed from responses to two questionnaire items: (1) Has a doctor ever told you that you had a cataract in one eye? (2) Has a doctor ever told you that you had cataracts in both eyes, at the same time?
[5] Categories may not add up to 100% due to rounding.

Table 14.2: Percent Reporting Vision Problems[1,2]

Use of Glasses and Visual Symptom	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty: Receives No Help (N = 478)	ADL Difficulty: Receives Help (N = 181)
Do you have glasses or contact lenses?							
Yes	94.7	95.2	94.7	93.2	94.9	95.5	92.2
If yes: Do you wear them . . . ?[4]							
Most of the time	66.9	66.2	66.3	70.7	66.4	68.2	64.2
Sometimes	9.8	9.2	10.8	8.7	7.6	10.3	12.8
For special reasons, such as reading or driving	21.6	23.6	20.9	17.6	23.3	21.0	19.8
Never	1.7	1.0	2.0	3.1	2.7	0.5	3.2
Can you see well enough to recognize someone across the room?[5]							
No	5.4	3.6	5.8	9.7	5.8	4.7	6.6
Can you see well enough to watch TV?[5]							
No	5.0	4.2	4.1	9.6	5.3	4.2	6.5
Can you see well enough to read the newspaper?[5]							
No	12.6	8.4	14.1	21.0	9.9	11.4	21.6
Do you ever have trouble with blurred vision?							
Yes	37.0	38.5	36.4	34.2	36.5	35.3	42.7

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.
[5] When applicable, the phrase, "with glasses, if needed," is embedded in the questionnaire item.

Table 14.3: Visual Acuity Measure[1,2]

Test Result	Total (N=1002)	Age Group			Disability Level		
		65-74 (N=388)	75-84 (N=311)	85 + (N=303)	Moderate[3] (N=343)	ADL Difficulty: Receives No Help (N=478)	ADL Difficulty: Receives Help (N=181)
Number completing exam	907	364	273	270	309	445	153
Percent completing exam	91.0	94.1	88.3	89.2	89.7	93.5	86.7
Worn for exam (%)[4]							
Glasses	81.7	82.3	81.0	81.3	83.3	81.7	77.8
Contact lenses	0.6	0.5	0.8	0.3	0.4	0.7	0.9
Neither	17.8	17.1	18.2	18.4	16.3	17.6	21.3
Snellen denominator (Mean)[5]	38.0	32.8	38.9	51.6	38.1	35.2	46.3
Visual acuity (%)[5]							
20/20 or better	23.3	33.9	17.4	6.7	26.8	23.8	14.6
20/40 or better	76.7	86.3	74.3	53.6	82.1	79.1	58.4
20/60 or better	91.6	94.5	90.9	84.4	91.1	94.5	83.9
20/200 or better	98.4	98.7	98.4	97.2	97.7	99.0	97.8
Worse than 20/200	1.6	1.3	1.6	2.8	2.3	1.0	2.2

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] All variables have less than 1% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Categories may not add up to 100% due to rounding.
[5] Visual acuity was measured using a Goodlite portable eye chart, usually at a distance at 10 feet. Acuity is presented as 20/Snellen denominator where the Snellen denominator is computed from correct answers on the acuity test and viewing distance (using log 10 minimum angle of resolution).

Table 14.4: Percent Reporting Hearing Problems[1,2]

Symptom	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[3] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Do you use a hearing aid?							
Yes	9.3	4.8	9.2	22.8	8.7	10.5	7.2
Can you hear well enough to use the telephone?							
No	5.9	4.6	6.0	9.1	5.1	6.9	4.6
Can you hear well enough to carry on conversation in a crowded room?							
No	18.3	15.0	19.4	25.2	14.8	21.3	17.5
Do you have trouble hearing another person if there is a radio or TV playing in the same room?							
Yes	45.9	40.7	48.0	55.9	39.1	48.3	53.7
Do you have difficulty hearing when someone speaks in a whisper?[4]							
Yes	50.9	41.0	55.4	67.6	45.9	53.2	54.8
Does a hearing problem cause you to feel frustrated when talking to members of your family?[4]							
Yes	12.5	10.1	12.4	19.6	10.4	12.8	15.8
Not applicable[5]	31.3	38.5	28.0	19.1	36.8	28.1	28.6
Does a hearing problem cause you to attend church, movies, concerts or other events less often than you would like?[4]							
Yes	6.1	3.8	6.7	11 1	3.9	7.9	5.4
Not applicable[5]	31.3	38.5	28.0	19.1	36.8	28.1	28.6
Does a hearing problem cause you to have arguments with family members?[4]							
Yes	5.1	4.2	5.3	7.3	3.6	5.7	6.9
Not applicable[5]	31.3	38.5	28.0	19.1	36.8	28.1	28.6
Does a hearing problem cause you difficulty when listening to television or the radio?[4]							
Yes	13.3	9.3	14.3	22.4	9.7	14.9	16.4
Not applicable[5]	31.3	38.5	28.0	19.1	36.8	28.1	28.6
Do you feel that any difficulty with your hearing limits or hampers your personal or social life?[4]							
Yes	9.0	5.8	10.1	15.7	5.6	11.5	9.3

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] Unless otherwise specified, all variables have less than 2% missing data. Results are based on non-missing data.
[2] Descriptive statistics are based on weighted data.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Item from Hearing Handicap Inventory for the Elderly-Screening Version. Ventry IM, Weinstein B. (1982). The Hearing Handicap Inventory for the Elderly: A new tool. *Ear Hear* 3:128-134.
[5] Includes participants reporting no hearing problems in the first five items of this table.

Table 14.5: Hearing Impairment Detected by Audiometry[1]

Test Result	Total (N=973)	Age Group			Disability Level			Age-Adjusted Disability Level[2]		
		65-74 (N=378)	75-84 (N=304)	85+ (N=291)	Moderate[3] (N=338)	ADL Difficulty: Receives No Help (N=459)	ADL Difficulty: Receives Help (N=176)	Moderate[3]	ADL Difficulty: Receives No Help	ADL Difficulty: Receives Help
Impaired hearing (%)[4]	38.5	21.2	45.1	71.9	33.4	40.5	43.5	33.2	36.7	36.3
Bilateral impairment (%)[5]	32.7	16.6	37.8	66.9	27.5	35.7	35.6	27.3	32.0	28.5
Percent failing to hear 40-dB tone at signal frequency (Hz)[6]										
In both ears										
500	18.1	8.9	19.9	40.8	13.4	20.2	22.3	13.5	17.9	18.6
1000	27.1	13.7	30.9	56.3	23.2	29.3	29.1	23.3	26.1	22.8
2000	22.0	9.1	24.9	52.4	16.7	23.7	28.2	16.5	20.9	21.9
4000	41.5	23.9	47.8	76.6	34.2	44.8	47.4	34.1	40.9	39.8
In one ear only										
500	14.4	12.3	13.9	22.1	17.7	12.2	13.8	17.6	11.9	12.2
1000	18.7	16.9	20.2	19.8	21.8	16.2	18.9	21.6	16.1	18.6
2000	16.9	13.5	19.1	20.9	17.4	16.2	17.8	17.5	15.6	16.2
4000	21.0	22.6	21.6	14.5	25.9	17.4	20.8	25.2	18.2	22.2

(Women's Health and Aging Study, physical assessment, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] Adjusted using U.S. female population, 1992.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).
[4] Participant was considered to be hearing impaired if she had (1) a 40-dB loss at the 1000- **or** 2000-Hz frequency in both ears or (2) a 40-dB loss at the 1000- **and** 2000-Hz frequencies in one ear.
[5] 40-dB loss at 1000-Hz **or** 2000-Hz in both ears.
[6] Two trials at each signal frequency.

15

Medication Use

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Medication use is an important consideration in studying the relationship between disease and disability. Drug therapy can substantially modify the risk and progression of conditions that cause disability. For example, the incidence of two major causes of disability—stroke and hip fracture—can be reduced by appropriate pharmacological treatment of systolic hypertension and osteoporosis, respectively (LaCroix et al., 1990; SHEP Cooperative Research Group, 1991; Storm et al., 1990). Also, treatment of congestive heart failure with angiotensin converting enzyme (ACE) inhibitors can decrease morbidity and improve survival, compared with conventional therapies (Pfeffer et al., 1992; SOLVD Investigators, 1992). Conversely, certain drugs can cause adverse reactions that, at least in some patients, may offset the beneficial effects and possibly aggravate prevalent diseases (Carbonin et al., 1991). For instance, digoxin toxicity is not uncommon and increases among the oldest old (Pahor et al., 1993), and continued use of cathartics may be associated with an increased risk of hypoalbuminemia (Pahor et al., 1994b), an important predictor of total and cardiovascular mortality (Corti et al., 1994).

Determining prescribed medications is also useful in epidemiologic research as an adjunct to self-report for determining disease presence and severity. Conditions such as angina, congestive heart failure, diabetes mellitus, chronic obstructive pulmonary disease, cancer, and Parkinson's disease are treated with specific prescription drugs.

This chapter describes the medications taken most frequently by participants in the Women's Health and Aging Study (WHAS) and provides several examples of how specific drugs may be related to health and functioning in older women. This information may be useful for planning further research on medication use in the older population.

Use of Prescription and Over-the-Counter Drugs

Each participant was asked if she had taken any prescription or nonprescription medication in the past 2 weeks. If she answered yes, she was asked to present all medicine containers. The interviewer recorded the medication name, whether it was prescribed or over-the-counter (OTC), and the form, strength, and prescribed dosage. The interviewer also asked how much the participant actually took. If the medication container was not available, only the name, whether prescription or OTC, and the amount taken were ascertained. This method of medication ascertainment is similar to that used in other epidemiological studies (Pahor et al., 1994a) and has been demonstrated to be valid and reliable (Landry et al., 1988; Psaty et al., 1992). To facilitate data entry, all medications were coded according to a 7-digit numerical code that identifies specific drug products, strengths, and forms. For analytical purposes, these drug product codes were converted into an 8-digit numerical coding system that identifies specific

ingredients and four hierarchical levels of therapeutic and chemical categories (Pahor et al., 1994a).

Eighty-eight percent of these disabled women reported taking prescription medications during the 2 weeks before the baseline interview (Table 15.1). Medication use was slightly lower among the oldest old and slightly higher among women receiving help with activities of daily living (ADLs). Seventy-eight percent of the women reported taking nonprescription drugs. The rates of prescription medication use are slightly higher than those reported in the Established Populations for Epidemiologic Studies of the Elderly (EPESE; Chrischilles et al., 1992), which ranged from 68 to 78 percent of women. Chrischilles and colleagues reported that rates of prescription drug use were significantly higher among women limited in walking, climbing stairs, and performing heavy housework, ranging from about 80 to 90 percent. Rates of OTC drug use were similar in the WHAS and the EPESE. Nationally, in 1987, 84.5 percent of women age 65 years and older used prescription medications (Moeller and Mathiowetz, 1989).

Use of Specific Medications

Table 15.2 presents rates of medication use in the principal drug categories and according to ingredients, expressed as the percentage of participants taking these drugs. As expected, the most frequently taken medications are in the following categories: cardiovascular drugs, nonsteroidal anti-inflammatory drugs (NSAIDs), diuretics, and vitamins. The use of medications such as corticosteroids and anticoagulants, which may indicate the presence of a severe underlying disease, was about twice as frequent in WHAS participants as among a general older population (Pahor et al., 1994c). These participant-based rates of use are lower than drug-based rates would be for two reasons. First, a participant may have taken more than one medication within a specific category. For example, a participant may have taken digoxin, nitroglycerin, and enalapril, which are all in the cardiovascular drug category. In fact, participants taking cardiovascular drugs averaged 1.8 medications per person in this category. Second, some medications contain two or more ingredients in combination (e.g., certain brands of antacids that contain both aluminum hydroxide and magnesium hydroxide, and cathartic medications that are a combination of ingredients).

Acetaminophen and aspirin were the most frequently taken drug ingredients (38.0 and 36.9 percent, respectively), and ibuprofen was the most frequently used NSAID after aspirin (11.6 percent). A positive aspect of this finding is that, among NSAIDs, ibuprofen has the lowest risk of severe adverse reactions such as gastrointestinal hemorrhage (Kaufman et al., 1993; Pahor et al., 1994c). Overall, 55 percent of participants used one or more NSAIDs. Opioid analgesics were also used relatively frequently (5.9 percent). Although aspirin may have been prescribed as a platelet antiaggregant for some participants, these findings show that pain relief was a major concern in the WHAS population.

Among cardiovascular drugs used for treating hypertension, calcium antagonists were the most frequently taken, followed by ACE inhibitors and beta-blockers. This pattern differs from that of a 1988 study, which found that beta-blockers were more commonly used for hypertension in older patients than calcium antagonists and ACE inhibitors (Pahor et al., 1995). Changes in drug use over time have been documented by longitudinal studies (Glynn et al., 1995; Manolio et al., 1995; Psaty et al., 1995), and this fact could have an impact on morbidity and mortality in the WHAS. The frequent use of nitrates (20.1 percent), indicates that about one out of five participants had treated angina.

Thyroid hormones were used relatively frequently (9 percent); it is unclear whether this high rate reflects clinical hypothyroidism or use of these drugs for other conditions. The use of thyroid hormones has been associated with an increased risk for osteoporosis (Schneider et al., 1994) and therefore might increase the incidence of hip fracture and aggravate disability.

A great deal of additional information is available in Table 15.2. Highlights of interest include:

- The rate of use of tamoxifen, a drug prescribed for breast cancer, was 1.6 percent.
- The rate of antiarrhythmic drug use was 1.9 percent.
- The rate of digoxin use was 13.5 percent.
- The rate of antilipemic (cholesterol-lowering) medication use was 8.6 percent.
- The rate of benzodiazepine use was 8.8 percent.
- The rates of calcium supplement and vitamin D use were relatively low (4.1 and 3.1 percent, respectively).
- The rate of diuretic use was quite high (38.9 percent).
- The rates of use of oral hypoglycemic drugs and insulin were 8.7 and 4.8 percent, respectively.
- The rate of estrogen use was 7.7 percent.

Summary

Medication use among participants in the WHAS was high, with sufficient numbers to estimate rates for selected ingredients, the most common of which are shown in Table 15.2. The WHAS has the unique advantage of studying disabled older persons, who are usually excluded from large clinical trials because of their difficulty in making repeated visits to a clinic and complying with a demanding protocol. Evaluation of adverse and beneficial effects may help to clarify the potential impact of medication use on disability.

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Table 15.1: Percent Using Prescription and Over-the-Counter Drugs[1]

Medication Use	Total (N = 1002)	Age Group			Disability Level		
		65-74 (N = 388)	75-84 (N = 311)	85 + (N = 303)	Moderate[2] (N = 343)	ADL Difficulty	
						Receives No Help (N = 478)	Receives Help (N = 181)
Do you have any medicines prescribed by a doctor that you have taken or used in the past 2 weeks?							
Yes	88.0	88.4	88.4	85.6	86.9	87.8	90.6
During the past two weeks, did you take any medicine not prescribed by a doctor?							
Yes	77.8	76.6	79.7	75.8	77.4	79.9	72.7

(Women's Health and Aging Study, baseline interview, 1992-1995)

[1] Descriptive statistics are based on weighted data.
[2] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Table 15.2: Medications Taken by Participants[1,2]

Therapeutic or Chemical Category	Most Frequent Drug Ingredients (Percent)	Percent
Antigout	Allopurinol (1.1), colchicine (1.0), probenecid (0.4)	**2.1**
Antihistamines	Diphenhydramine (2.8), chlorpheniramine (1.6)	**9.0**
Antiinfectives		**11.9**
Antibiotics	Neomycin (1.3), amoxicillin (0.9), polymyxin-B (0.9)	6.3
Antimalarials	Quinine (2.5), hydroxychloroquine (0.4)	2.9
Other (antiviral, urinary)	Sulfamethoxazole (1.2), amantadine (0.6), sulfacetamide (0.4)	3.6
Antineoplastic	Tamoxifen (1.6), methotrexate (0.3)	**2.4**
Autonomic		**33.8**
Parasympathomimetic	Pilocarpine (2.6), pyridostigmine (0.1)	3.0
Parasympatholytic	Ipratropium bromide (3.9), atropine (1.9)	7.6
Sympathomimetic	Albuterol (4.7), pseudoephedrine (1.6)	8.9
Sympatholytic		20.9
Beta-blockers	Atenolol (6.4), timolol oph. (3.7), metoprolol (3.4), propranolol (1.6)	18.6
Alpha-blockers	Terazosin (0.8), prazosin (0.5)	1.3
Muscle relaxants	Cyclobenzaprine (0.4), methocarbamol (0.4), baclofen (0.2)	1.1
Blood formation and coagulation		**19.5**
Antianemia	Iron preparations (14.8)	14.8
Anticoagulants	Warfarin (5.3)	5.3
Cardiovascular		**58.4**
Cardiac		14.5
Antiarrhythmic	Quinidine (0.9), flecainide (0.3)	1.9
Glycosides	Digoxin (13.5)	13.5
Antilipemic	Lovastatin (4.8), pravastatin (1.7), gemfibrozil (1.0), cholestyramine (0.5)	8.6
Hypotensive		20.4
ACE-inhibitors	Enalapril (5.9), lisinopril (4.9), captopril (4.8), ramipril (0.7), benazepril (0.6), quinapril (0.5)	17.3
Other	Clonidine (1.4), methyldopa (1.0), reserpine (0.7)	3.6
Vasodilators		39.9
Nitrates	Nitroglycerin (15.7), isosorbide dinitrate (6.4), isosorbide mononitrate (0.6)	20.1
Calcium channel blockers	Nifedipine (9.7), diltiazem (8.2), verapamil (7.8), nicardipine (1.0)	28.0
Central nervous system		**82.3**
NSAID	Aspirin (36.9), ibuprofen (11.6), naproxen (3.8), nabumetone (2.2)	55.0
Opioid analgesics	Propoxyphene (4.4), oxycodone (1.7)	5.9
Analgesics and antipyretics	Acetaminophen (38.0)	39.6
Anticonvulsants	Phenobarbital (1.1), phenytoin (0.8)	1.9
Antidepressants	Amitriptyline (2.2), nortriptyline (1.7)	7.7
Benzodiazepines	Alprazolam (2.1), lorazepam (1.9), temazepam (1.3)	8.8
Dopaminergic	Levodopa (1.4)	1.4
Other	Caffeine (3.8)	7.1
Drugs affecting electrolytes		**51.1**
Replacements	Potassium (16.2), trace elements (12.0), calcium (4.1)	29.4
Diuretics		38.9
Low-ceiling	Hydrochlorothiazide (17.0)	19.3
Loop	Furosemide (17.2), bumetadine (1.8)	18.9
Other	Triamterene (7.7), spironolactone (0.9)	10.1
Other	Sodium bicarbonate (0.9), lactulose (0.5)	2.8
Gastrointestinal		**42.6**
Antacids	Calcium carbonate (8.1), magnesium hydroxide (7.0), aluminum hydroxide (5.8)	17.8
Cathartics	Docusate (6.6), phenolphthalein (3.6)	12.8
Antiulcer	Ranitidine (8.3), omeprazole (1.5), cimetidine (1.5)	14.5
Other	Psyllium (5.6), simethicone (4.4)	15.7

(Continued)

(Continued)

Therapeutic or Chemical Category	Most Frequent Drug Ingredients (Percent)	Percent
Hormones		**34.4**
Corticosteroids	Prednisone (4.3), hydrocortisone topical (1.6), prednisolone (1.6), triamcinolone (1.0), dexamethasone (1.2)	9.6
Estrogens	Conjugated estrogens (6.2)	7.7
Antidiabetic		13.3
Insulins	Insulin (4.8)	4.8
Sulfonylureas	Glyburide (6.0), glipizide (1.7)	8.7
Progestogens	Medroxyprogesterone (1.5)	1.6
Thyroid gland		9.6
Thyroid agents	Levothyroxine (8.5), thyroid (0.6)	9.0
Antithyroid agents	Propylthiouracil (0.3)	0.4
Bronchial spasmolytics	Theophylline (4.9), oxybutynin (1.5)	**6.5**
Skin and mucous membrane agents	Beclomethasone (3.9), methyl salicylate (1.6)	**10.6**
Vitamins	Multivitamin preparation (19.1), vitamin C (8.1), vitamin B (6.7), vitamin E (6.1), vitamin D (3.1)	**29.2**

(Women's Health and Aging Health, baseline interview, 1992-1995)

[1] Information on medication use is missing for less than 3%. Results are based on non-missing information.

[2] A. Do you have any medicines prescribed by a doctor that you have taken or used in the past 2 weeks? Please include insulin and eye drops if you use them.
B. We are also interested in other medicines not prescribed by a doctor such as: aspirin, Tylenol, Bufferin, Anacin, headache pills or pain killers, laxatives, bowel medicine, cold medicine, cough medicine, sleep medicine, antacids or stomach medicines, vitamins, ointments, salves, or eye drops, or any other medicines from the drug store. During the past two weeks, did you take any medicine not prescribed by a doctor?
C. May I see the medicine bottles, containers or bags for all of the medicines that you have taken or used in the last two weeks? Please include medicine prescribed by a doctor and medicine not prescribed by a doctor. Please remember to include insulin and eye drops if you use them.

16

Hematologic, Biochemical, and Hormonal Characteristics

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The Women's Health and Aging Study (WHAS) includes an ancillary study of selected biochemical, hematological, and hormonal markers that might be associated with higher levels of disability. This portion of the WHAS involved collection of blood samples from all participants who consented, after completion of their baseline evaluations. Approximately 75 percent of women enrolled in the study completed the phlebotomy at baseline. Venipuncture was performed in the home by a certified phlebotomist following a standardized protocol. Blood samples were obtained in a non-fasting state. Processing and aliquoting were carried out in the Core Genetics Laboratory of The Johns Hopkins University School of Medicine. Samples were shipped to the central laboratory of Corning Clinical Laboratories (formerly MetPath) in Teterboro, New Jersey, for analysis.

In this chapter, we describe selected baseline laboratory results focusing on commonly performed and basic biochemical and hematologic health status indices.

Measures of Protein Status and Nutrition

Serum albumin levels are, in general, a reliable indicator of visceral protein status in older persons (Mobarhan and Trumbore, 1991), and studies have shown that low levels of albumin are predictive of increased morbidity and mortality (Agarwal et al., 1988; Corti et al., 1994; Rudman et al., 1987). In the WHAS cohort, 4 percent of all participants had low levels of serum albumin (less than 3.5 gm/dL; Table 16.1). When evaluated by age group and level of disability, the proportion of women with low albumin was higher in the oldest age group and among women with the most severe disability. Specifically, the proportion of women with hypoalbuminemia was more than three times higher in women receiving help with activities of daily living (ADLs) compared with women classified as moderately disabled (7.2 versus 2.2 percent). Table 16.1 also shows that the proportion of women receiving help in ADLs who had low-normal serum albumin (3.5 to 3.8 gm/dL) was nearly twice that of the moderately disabled group (37 versus 17 percent).

Serum cholesterol in older adults is another measure of nutritional status and general health and may be a risk factor for cardiovascular disease among older adults. For many biologic measures, associations with adverse outcomes tend to be U-shaped, that is, with increased risk at the lower as well as the upper ranges. This appears to be the case with cholesterol: higher levels of morbidity and mortality are associated with levels below approximately 160 mg/dL and above approximately 240 mg/dL (Jacobs et al.,

above approximately 240 mg/dL (Jacobs et al., 1992). Previous studies, particularly of individuals in acute and chronic care settings, have shown associations between low serum cholesterol and such adverse outcomes as mortality, iatrogenic complications, poor recovery from illness, and higher cost and duration of medical care (Jacobs et al., 1992; Noel et al., 1991; Rudman et al., 1988). Low serum cholesterol has also been identified as a marker for increased risk of cancer (Kritchevsky et al., 1991). On the other hand, elevated serum cholesterol has been widely associated with increased risk of cardiovascular disease in young and middle-aged adults (Stamler et al., 1986) and possibly in older adults (Corti et al., 1995; Harris et al., 1987).

Total cholesterol was measured by enzymatic methods. As with albumin, the proportion of women in the WHAS with lower levels of cholesterol was greatest in the oldest age group and in those with the most severe disability. Overall, 4 percent of these disabled women had serum cholesterol levels below 160 mg/dL. Stratified by age, 8 percent of women over age 85 had serum cholesterol levels below 160 mg/dL compared with 3 percent of women age 65 to 74 years. Thirty-nine percent of women age 85 years and older had cholesterol levels less than 200 mg/dL, compared with 22 percent of women age 65 to 74 years. The association between low cholesterol and disability level was less clear in this cohort of moderately to severely disabled women. Approximately one-third of women in every age and disability category had cholesterol levels over 239 mg/dL.

High-density lipoprotein cholesterol (HDL-C) level, like total cholesterol, is associated with morbidity and mortality. Epidemiologic evidence has shown that within a population group, HDL-C level is strongly and inversely correlated with the risk of cardiovascular disease (Corti et al., 1995; Kannel, 1987; Stampfer et al., 1991). Levels of HDL-C in older persons have recently been associated with such modifiable risk factors as obesity, use of certain medications, and glucose tolerance (Ettinger et al., 1992).

Table 16.1 displays the HDL-C levels, determined using phosphotungstic precipitation and enzymatic cholesterol, for the WHAS population. The cut-points for total and HDL cholesterol levels were selected according to the guidelines of the National Cholesterol Education Program (Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, 1994). HDL-C levels below 35 mg/dL are considered abnormal; levels above 60 are most clearly associated with reduced incidence of cardiovascular disease. Unlike total cholesterol, mean HDL-C level did not differ among the age groups. However, as with total cholesterol, the mean HDL-C level was noticeably lower in the most disabled group. A higher proportion of those receiving help with ADLs had low HDL-C compared with those with moderate disability (14 percent versus 5 percent). Additionally, in comparison with those with moderate disability, a much lower proportion of women in the highest disability group were found to have high levels of HDL-C (20 percent versus 36 percent).

Hematologic Measures

Hematopoiesis, the process of producing blood cells, is one of a number of biologic systems in which an attenuation in production is noted with increasing age or under stressful circumstances. Although several studies have shown that there is no difference in the baseline hematopoietic function of carefully selected healthy old and young adults (Garry et al., 1981; Lipschitz et al., 1984), the process of hematopoiesis and its various components are highly vulnerable to stress and disease in older adults. One aspect of hematopoiesis—erythropoiesis (red blood cell formation)—can be dampened by a wide variety of stressors such as malnutrition, inflammation, and chronic disease (Dallman et al., 1984; Lipschitz, 1994; Lipschitz and Mitchell, 1982).

Hemoglobin is the protein in the red blood cells that transports oxygen throughout the body. Anemia, the condition in which the number of red blood cells and the concentration of hemoglobin in blood is below normal, is the primary manifestation of diminished erythropoietic function. Blood loss, chronic disease, and inflammation are the most common causes of anemia and low hemoglobin in older adults (Lipschitz, 1994). Hemoglobin was measured by spectrophotometry. Table 16.1 displays the hemoglobin levels for participants in the WHAS. A hemoglobin value below 12.0 gm/dL is considered to be low and suggests anemia. In the WHAS, approximately 20 percent of these disabled women had low hemoglobin, including 18 percent of those age 65 to 74 years and 29 percent of those age 85 years and older. The proportion of women who were anemic did not differ by level of disability. From 1 to 3 percent of women in all age and disability categories had levels of hemoglobin consistent with severe anemia (hemoglobin less than 10.0 gm/dL).

The mean corpuscular volume (MCV) is another component of the complete blood count that, in clinical practice, is routinely obtained. The reference range for MCV is approximately 83 to 103 femtoliters (fL). The MCV is a precise, accurate measure that can be used to differentiate among the various etiologies of anemia. Thus, anemia can be classified as microcytic (MCV below 83 fL), normocytic (MCV 83 to 103 fL), or macrocytic (MCV greater than 103 fL). By far the most common cause of microcytic anemia in older adults is iron deficiency as a result of bleeding, usually gastrointestinal. Dietary factors, such as poor dietary intake of folate and diminished intestinal absorption of vitamin B12, are important in the etiology of macrocytic anemia (Davidson and Hamilton, 1978). Other significant causes of macrocytic anemia are liver disease and acquired disorders of bone marrow stem cells (Koeffler and Golde, 1980). Normocytic anemia is associated with a variety of conditions, including such chronic diseases as renal failure and rheumatoid arthritis (Cartwright, 1966).

Table 16.1 shows the MCV distribution for women in the WHAS with and without anemia. The majority of participants with low hemoglobin levels (hemoglobin < 12 gm/dL) were found to have normocytic anemia. However, 23 percent were classified as having microcytic anemia and 6 percent macrocytic anemia. Stratified by age, a noticeably smaller proportion of women with anemia age 85 years and older were found to have microcytic anemia compared with women age 65 to 74 years (14 percent versus 27 percent). The proportion of anemic women with microcytic anemia did not differ by level of disability. Again, as with the general nutritional and health status measures albumin and cholesterol, a much higher proportion of women in the oldest and most disabled groups was found to have macrocytic anemia. Table 16.1 also shows that, even in women without anemia, there was a trend toward a higher MCV with increasing level of disability.

Measures of Glucose Metabolism

Carbohydrate metabolism is another area in which attenuation in homeostatic control often occurs with aging. A number of studies have demonstrated a progressive, age-associated decline in glucose tolerance (Andres, 1971; Davidson, 1979; Shimokata et al., 1991). This alteration in ability to metabolize energy is believed by many to be a marker for frailty and age-associated decline in health measures.

In the WHAS, 21 percent of these disabled women reported being diagnosed by a physician as having diabetes (Chapter 9, Table 9.1). In comparison, the National Health and Nutrition Examination Survey and other investigators report that approximately 10 percent of people over the age of 65 have been diagnosed as having diabetes; among those age 85 years and older, 25 percent have this diagnosis (Bennett, 1984; Harris et al., 1987; Wilson, 1980). It is known, however, that 50 percent of cases of diabetes are undiagnosed (Harris et al., 1987). Therefore, the

WHAS self-reports may be underestimates. Consistent with this possibility, high levels of serum glucose were prevalent among WHAS participants who did not have a history of diabetes. Serum glucose level was assessed using glycohemoglobin, a measure of mean serum glucose over a 3-month period, measured by liquid chromatography. Table 16.1 shows that 30 percent of the women who had no history of diabetes had elevated glycohemoglobin levels above 8 percent (normal = 6 to 8 percent). This proportion did not vary substantially by age or disability level.

Recent studies in insulin-dependent diabetes mellitus have demonstrated that better control of blood glucose slows the progression of the complications associated with diabetes (Diabetes Control and Complications Trial Research Group, 1993). However, by far the most common form of diabetes in older adults is non-insulin dependent diabetes mellitus. Among WHAS participants, 44 percent of women reporting diabetes were found to have markedly elevated glycohemoglobin levels, indicating increased risk for complications. The proportion of diabetics with poor glucose control was considerably lower in women with diabetes age 85 years and older compared with the younger women. This finding might reflect a change in the nature of diabetes at advanced age, that is, more people developing mild diabetes with age or those with diabetes requiring less intensive treatment. There is also likely a survival effect, resulting from higher mortality among those with the most severe diabetes.

Thyroid Function

The belief that deficiency in hormonal (endocrine) function has a role in age-associated decline in homeostasis and function has had proponents for more than a hundred years (Brown-Sequard, 1889). Because of the relative frequency of diseases affecting thyroid function in older adults (Rae et al., 1993), thyroid function was assessed in the WHAS participants by serum thyrotropin (thyroid stimulating hormone, TSH; measured by immunoassay) and by thyroxine (T4; measured by chemiluminescence assays). TSH, secreted by the pituitary gland, is responsible for a number of thyroid-associated functions, including hormone synthesis, thyroid gland growth, and release of thyroid hormones. Thyroxine, in turn, is the primary hormone produced by the thyroid gland, and its measurement is important to detect overt thyroid dysfunction. In addition, certain subtle derangements of thyroid gland function can be recognized only by serum TSH measurement. In so-called subclinical hypothyroidism, in which serum TSH is elevated in the presence of a normal serum free thyroxine, higher incidences of subsequent overt hypothyroidism (Tunbridge et al., 1977), associated hypocholesterolemia (Arem and Patsch, 1990), and nonspecific symptoms of thyroid hormone deficiency (Cooper et al., 1984) have been reported. On the other hand, in subclinical hyperthyroidism, in which serum TSH level is low despite normal serum free thyroxine, higher risks of atrial fibrillation (Sawin et al., 1994) and decreased bone mineral density (Stall et al., 1990) have been described in older persons. Because both a variety of nonthyroidal illnesses and malnutrition can alter tests of thyroid function, the specificity of low serum thyroxine and TSH levels is relatively low in ill persons, particularly those requiring hospitalization. Therefore, in chronically ill populations, the specificity of a single abnormal thyroxine or TSH value for primary thyroid disease is relatively low.

TSH levels were abnormal in 14 percent of the WHAS cohort; 5.6 percent had low levels of measured TSH and 8.5 percent had elevated measures (Table 16.1). The mean level did not differ by age group but increased with severity of disability. Specifically, 16 percent of women who received help with ADLs had elevated TSH, while only 7 percent of moderately disabled women had elevated TSH.

For the total WHAS cohort, 7 percent of participants had levels of thyroxine outside the ref-

erence range. Of these, Table 16.1 shows that 2 percent had elevated levels and 5 percent had depressed levels of measured thyroxin. By age group, mean thyroxine was lower for women age 85 years and older compared with those age 65 to 74 years. Similarly, the proportion of women age 85 years and older with low levels of measured thyroxine was somewhat higher than that in the 65 to 74 age group (9 percent versus 6 percent). Lower levels of measured T4 were noted among women who received help with ADLs compared with the less disabled groups.

As noted above, there was a low prevalence of elevated thyroxine in this population. In fact, almost no women in the oldest age group and the highest disability classification in Table 16.1 had high levels of measured thyroxine.

Creatinine

Serum creatinine is a measure of renal function. The production of creatinine, derived from muscle metabolism, increases as muscle mass increases. Hence, creatinine production generally increases during the first two decades of life and begins to decline during the fifth decade of life as muscle mass begins to decline. However, a concomitant decline in glomerular filtration rate (GFR) with age in healthy individuals tends to offset the decrease in creatinine production to the extent that little change in serum creatinine level is seen in healthy older adults. In general, serum creatinine levels above 1.4 mg/dL are considered abnormal. However, it has been pointed out that this commonly used cutoff could miss renal insufficiency in small older women; for example, estimated GFR (Cochroft-Gault) for a 60 kg woman with a serum creatinine of 1.2 is approximately 30 cc/minute (Lemann et al., 1990). Overall, approximately 9 percent of WHAS participants had serum creatinine levels above 1.4 mg/dL. Mean serum creatinine did not vary across age groups or disability classifications. Nor did the proportion of individuals with high levels of serum creatinine vary greatly by age (7 percent of women age 65 to 74 years, versus 10 percent of those 85 years and older) or disability levels (8 to 9 percent). Twelve percent of participants had serum creatinine levels between 1.2 and 1.4 mg/dL.

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Table 16.1: Distribution (Percent) of Laboratory Blood Test Results[1]

Test Result[2]	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85 +	Moderate[3]	Receives No Help	Receives Help
Albumin (gm/dL) (N = 697)							
Mean	4.0	4.1	4.0	4.0	4.1	4.1	3.9
< 3.5	3.0	3.0	2.6	4.2	2.2	2.1	7.2
3.5-3.8	22.0	20.6	21.9	27.8	17.0	20.6	37.3
3.9-4.2	51.7	49.2	56.1	47.1	55.7	53.2	38.5
> 4.2	23.3	27.3	19.5	20.8	25.1	24.2	17.0
Cholesterol (mg/dL) (N = 700)							
Mean	225.4	228.8	224.1	216.6	226.8	226.8	218.0
< 160	3.7	2.6	3.8	7.5	2.9	4.4	3.6
160-199	22.4	19.0	23.8	31.0	23.2	20.0	27.8
200-239	41.8	45.5	40.5	31.8	42.5	42.3	38.7
> 239	32.1	32.9	31.8	29.7	31.4	33.3	29.9
HDL cholesterol (mg/dL) (N = 708)							
Mean	53.2	52.4	54.4	53.0	54.5	53.7	49.1
< 35	7.5	9.1	5.5	7.6	5.2	7.2	13.5
35-59	61.3	61.5	60.3	63.7	59.4	61.1	66.4
> 59	31.2	29.4	34.1	28.7	35.5	31.8	20.1
Hemoglobin (gm/dL) (N = 682)							
Mean	13.0	13.1	13.0	12.7	13.1	13.1	12.8
< 10.0	2.0	1.4	2.3	3.2	1.6	2.3	2.0
10.0-11.9	17.7	16.3	17.0	25.6	19.2	15.6	20.6
12.0-13.0	29.0	29.2	28.6	29.3	27.4	28.8	32.9
> 13	51.4	53.1	52.1	42.0	51.9	53.3	44.5
Mean corpuscular volume (fL) in those with anemia (hemoglobin < 12.0 gm/dL) (N = 146)							
Mean	90.2	89.4	89.4	93.7	89.4	91.1	89.8
< 83	22.6	22.6	26.7	13.6	26.6	18.7	23.2
83-103	72.0	75.3	66.8	75.6	69.5	76.7	66.0
> 103	5.5	2.1	6.5	10.8	3.9	4.6	10.8
Mean corpuscular volume (fL) in those without anemia (N = 536)							
Mean	94.0	94.0	94.0	94.2	93.8	94.2	94.0
< 83	3.3	2.1	4.1	5.1	4.3	1.9	4.9
83-103	93.5	94.8	92.4	92.4	93.1	95.3	89.1
> 103	3.2	3.1	3.5	2.5	2.6	2.8	6.0
Glycohemoglobin (percent) in those reporting diabetes (N = 129)							
Mean	9.9	10.2	9.8	8.9	9.8	10.0	10.0
< 6.0	0.2	0.0	0.0	4.6	0.0	0.0	0.8
6.0-8.0	18.1	13.4	22.2	29.1	13.6	17.8	24.0
8.0-10.0	37.3	41.4	31.6	43.8	47.3	33.6	29.5
> 10.0	44.4	45.0	46.2	22.6	39.2	48.6	45.7
Glycohemoglobin (percent) in those reporting no diabetes (N = 532)							
Mean	7.7	7.8	7.6	7.7	7.6	7.8	7.6
< 6.0	2.7	2.0	3.9	1.4	3.1	1.4	6.6
6.0-8.0	67.1	67.4	66.9	66.1	67.8	67.0	65.0
8.0-10.0	28.9	28.4	28.4	31.7	26.9	30.4	28.4
> 10.0	1.4	2.2	0.7	0.8	2.2	1.2	0.0
TSH (μU/L) (N = 693)							
Mean	2.5	2.4	2.4	2.5	2.2	2.5	3.1
< 0.4	5.6	6.4	3.9	7.7	7.5	3.7	6.7
0.4-5.0	86.0	84.6	88.5	82.9	85.6	89.1	77.5
> 5.0	8.5	9.0	7.5	9.5	6.9	7.2	15.9

(Continued)

(Continued)

Test Result[2]	Total	Age Group			Disability Level		
						ADL Difficulty	
		65-74	75-84	85+	Moderate[3]	Receives No Help	Receives Help
Thyroxin (μg/dL) (N=698)							
Mean	7.4	7.5	7.5	7.1	7.5	7.5	7.1
<5.0	5.2	5.8	3.2	9.3	5.2	4.5	7.5
5.0-12.0	92.7	91.2	95.3	90.2	92.1	93.3	92.6
>12.0	2.1	3.0	1.5	0.5	2.8	2.2	0.0
Creatinine (mg/dL) (N=699)							
Mean	1.1	1.1	1.1	1.1	1.1	1.1	1.1
<0.9	18.7	23.0	15.3	13.5	14.6	20.4	23.1
.9-1.2	61.2	59.3	62.3	64.5	62.6	61.2	58.1
>1.2-1.4	11.6	10.9	12.3	12.1	14.5	10.1	9.5
>1.4	8.5	6.8	10.0	9.9	8.4	8.3	9.3

(Women's Health and Aging Study, 1992-1995)

[1] Reported N's are based on unweighted data. Other descriptive statistics are based on weighted data.
[2] Categories for each item may not add up to 100% due to rounding.
[3] No ADL difficulty; disabled in two or more domains (see Chapter 1).

Appendix A

Sample Design, Weighting and Estimation Procedures, and Computation of Sampling Errors

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Sample Design

The sampling frame for the Women's Health and Aging Study (WHAS) was restricted to Medicare beneficiaries residing in 12 Zip Code areas in and adjoining the city of Baltimore, Maryland. Four nonoverlapping probability samples, spaced approximately 6 months apart, were selected over a 2-year period. These four samples are referred to as "replicates" and are denoted by number in this appendix (i.e., replicate 1, replicate 2, etc.). The sample design for each replicate of the WHAS can be described as a stratified random sample of female Medicare beneficiaries with primary strata defined by the following three age groups: (1) 65 to 74 years; (2) 75 to 84 years; and (3) 85 years and older.

The sampling frame of Medicare beneficiaries in the target population was constructed from current Health Care Financing Administration (HCFA) files. To facilitate sample selection and updating in future replicates of the study, the original sampling frame was randomly divided into four mutually exclusive subsets that were balanced with respect to age group and Zip Code. As detailed below, the first of these subsets was then used to select the sample of beneficiaries for replicate 1. The remaining subsets were set aside for use in the subsequent replicates of the study and were updated for deaths, moves, and new enrollees using the most recent information available at the time of sample selection. Beneficiaries who were previously included in the Medicare Current Beneficiary Survey (MCBS) or the Senior Health Watch Study were deleted from the WHAS frame before sample selection, since these studies were also being conducted in Baltimore and there was a concern about respondent burden and potential nonresponse. It should be noted that since the samples for the other two studies were selected randomly, no sampling bias is introduced by excluding these persons from WHAS. Table A.1 summarizes the sample sizes for each of the four WHAS replicates by age group. The sample sizes shown in Table A.1 are for the "initial" samples of beneficiaries who were screened for eligibility. The corresponding numbers of

beneficiaries who were eligible for and completed the full baseline interview and nurse's examination are shown in Table A.4. In the remainder of this appendix, women who completed the full baseline interview and nurse's examination will be denoted as completing the examination. Additional information about the procedures used to select each of the four replicate samples is given below.

The sampling frame for the first replicate of the WHAS included 32,538 female Medicare beneficiaries who resided in the 12 Zip Code areas specified for the study and who were age 65 years or older as of September 1, 1992. Of the 32,538 eligible beneficiaries, 2,274 were MCBS or Senior Health Watch participants and were deleted from the sampling frame. The remaining 30,264 eligible beneficiaries were then stratified by Zip Code within each of three age groups (65 - 74, 75 - 84, and 85+) and randomly (and systematically) assigned to one of four mutually exclusive subsets of approximately equal size. The 7,566 beneficiaries who were assigned to subset 1 were retained for replicate 1. Subsets 2 to 4 were set aside for future use in subsequent replicates of the study.

Table A.1 Initial Sample Sizes for the WHAS, by Replicate and Age Group

Replicate	Age group (at time of sampling)			Total
	65 to 74 years	75 to 84 years	85 years and older	
1. September 1, 1992	600	425	340	1,365
2. March 1, 1993	600	425	340	1,365
3. September 1, 1993	600	476	571	1,647
4. March 1, 1994	752	481	911	2,144
Total	2,552	1,807	2,162	6,521

Within the subset designated for the first replicate, 600 beneficiaries were selected from the 65 to 74 years age group, 425 from the 75 to 84 years age group, and 340 from the age 85 years and older group, for a total sample size of 1,365 beneficiaries. The sample sizes established for each age group were designed to yield a total sample of about 250 study participants who met specific physical disability and cognitive function criteria (Kasper and Rohde, 1992; Shapiro, 1991). Within each age group, the samples were selected at rates that varied by Zip Code to take account of the previous selection of MCBS and Senior Health Watch participants. However, the overall probabilities of selection were independent of Zip Code for each age group; that is, the sample was self-weighting within each of the three age groups but not across the three age groups.

The sampling frame for the second replicate consisted of the 31,938 eligible female beneficiaries residing in the 12 target Zip Code areas who were age 65 years or older as of March 1, 1993 (i.e., an updated frame was used for the second replicate). The selection of the sample for this replicate proceeded as follows. First, the subset of 7,566 previously enrolled beneficiaries who had been designated for replicate 2 (i.e., subset 2 created during the selection of the sample for replicate 1) was updated for deaths and moves, which reduced the number of beneficiaries to 6,897. Next, a frame of new beneficiaries was constructed by matching the most recent HCFA file against the earlier HCFA file used to select the sample for replicate 1. This matching process identified 4,300 new beneficiaries who were then randomly assigned to one of four subsets of equal size. Subset 2, consisting of 1,075 new beneficiaries, was retained for further subsampling.

However, it was later discovered that the 4,300 "new" beneficiaries identified above also included MCBS and Senior Health Watch participants, who should have been excluded from this set. (This problem was corrected in subsequent replicates of the study.) Of the 1,075 "new" beneficiaries assigned to subset 2, only 552 were actually new enrollees. The rest were MCBS and Senior Health Watch participants. Since the inadvertent inclusion of MCBS and Senior Health Watch participants was not discovered at the time of sample selection, the file from which the sample for the second replicate was selected consisted of 6,897 + 1,075 = 7,972 beneficiaries. From this subset, 600 beneficiaries were selected from the age 65 to 74 years group, 425 from the age 75 to 84 years group, and 340 from the age 85 years and older group (age was determined as of March 1, 1993). Generally, any MCBS or Senior Health Watch participants who were sampled as part of the "new enrollee" sample were retained for the study.

Because the target sampling rates for the second replicate were derived under the erroneous assumption that MCBS and Senior Health Watch participants were excluded from the set of 4,300 newly enrolled beneficiaries, the actual overall sampling rates for the previously enrolled beneficiaries in replicate 2 varied slightly by Zip Code. However, this variation in sampling rates was not expected to seriously inflate the sampling errors of estimates from the survey.

The sampling frame for the third replicate consisted of the 31,068 eligible female beneficiaries residing in the 12 target Zip Code areas who were age 65 years or older as of September 1, 1993. Before the sample for this replicate was selected, the subset of 7,566 previously enrolled beneficiaries designated for replicate 3 (i.e., subset 3 created during the selection of the sample for replicate 1) was updated for deaths and moves. This reduced the number of previously enrolled beneficiaries in this subset to 6,497. Next, a frame of new beneficiaries was constructed in two parts. The subset of new beneficiaries (subset 3) identified during the creation of the frame for the second replicate was updated for deaths and moves, which resulted in a subset of 497 new beneficiaries who were identified in the second data collection period and who survived to the current period. An additional 1,126 new beneficiaries were identified by matching the most recent HCFA file against the earlier HCFA files used to select the samples for replicates 1 and 2. The 1,126 newly identified beneficiaries were then randomly assigned to one of four subsets of

approximately equal size. Subset 3, consisting of 281 of these new beneficiaries, was retained for further subsampling.

The file from which the sample for the third replicate was selected consisted of 6,497 + 497 + 281 = 7,275 beneficiaries. From this subset, 600 beneficiaries were selected from the age 65 to 74 years group, 476 from the age 75 to 84 years group, and 571 from the age 85 and older group (age was determined as of September 1, 1993), for a total sample of 1,647 beneficiaries. The somewhat larger sample sizes specified for replicate 3 were intended to compensate for the lower-than-expected study yields in the previous two replicates. The within-Zip Code sampling rates used to select the previously enrolled beneficiaries varied by Zip Code to compensate for the exclusion of MCBS and Senior Health Watch participants. However, the resulting overall probabilities of selection were independent of Zip Code within age group for both previous and new beneficiaries.

The sampling frame for the fourth and final replicate included 31,488 eligible female beneficiaries residing in the 12 target Zip Code areas who were age 65 years or older as of March 1, 1994. Before the sample for this replicate was selected, the subset of 7,564 previously enrolled beneficiaries designated for replicate 4 (i.e., subset 4 created during the selection of the sample for replicate 1) was updated for deaths and moves, which reduced the number of previously enrolled beneficiaries in this subset to 6,255. Next, a frame of new beneficiaries was constructed in three parts. The subset of new beneficiaries (subset 4) identified during the creation of the frame for the second replicate was updated for deaths and moves, which resulted in a subset of 488 new beneficiaries who were identified in the second data collection period and who survived to the current period. The subset of new beneficiaries (subset 4) identified during the creation of the frame for the third replicate was also updated for deaths and moves, which resulted in a subset of 255 new beneficiaries who were identified in the third data collection period and who survived to the current period. An additional 1,646 new beneficiaries were identified by matching the most recent HCFA file against the earlier HCFA files used to select the samples for replicates 1, 2, and 3. The 1,646 newly identified beneficiaries were then randomly assigned to one of four subsets of approximately equal size. Subset 4, consisting of 411 of these new beneficiaries, was retained for further subsampling.

The file from which the sample for the fourth replicate was selected therefore consisted of 6,255 + 488 + 255 + 411 = 7,409 beneficiaries. From this subset, 752 beneficiaries were selected from the age 65 to 74 years group, 481 from the age 75 to 84 years group, and 911 from the age 85 years and older group (age was determined as of March 1, 1994), for a total sample of 2,144 beneficiaries. The sample sizes specified for the fourth replicate reflected additional adjustments designed to more closely achieve the study's overall sample size goals within age groups. The within-Zip Code sampling rates used to select the previously enrolled beneficiaries varied by Zip Code to compensate for the exclusion of MCBS and Senior Health Watch participants. As a result of the larger sample size requirements for the oldest age group, all available beneficiaries designated for the fourth replicate in some Zip Codes were included in the sample. The resulting overall probabilities of selection therefore varied slightly by Zip Code for the oldest age group.

Within the two younger age groups, the overall probabilities of selection were independent of Zip Code.

Weighting and Estimation Procedures

The estimates of means and proportions presented in this monograph were calculated using weights that inflate the respondent data to population levels. Such weights are needed to properly reflect sample design features such as stratification and variable probabilities of selection, and also to compensate for differential nonresponse rates (e.g., see Skinner et al., 1989). As described below, two sets of weights were developed for the analysis of the WHAS data, including one set for the initial (screening) sample and another for the final study sample (women who completed both the baseline interview and the followup nurse's examination). The procedures used to construct the weights for the WHAS samples are described in the following sections.

Weighting the Initial (Screener) Sample

The first step in the weighting process was to assign base weights equal to the reciprocals of the overall probabilities of selection to each beneficiary included in the initial sample. The sum of the base weights (when summed over all beneficiaries in the screening sample) provides an unbiased estimate of the number of beneficiaries in the HCFA frame at the time the sample was selected. The average base weights assigned to the sampled beneficiaries and the corresponding weighted sample counts are summarized in Table A.2 by age group and replicate.

Table A.2. Base Weights Assigned to Sampled Beneficiaries, by Replicate and Age Group

Replicate	Age group (at time of sampling)			Weighted sample count
	65 to 74 years	75 to 84 years	85 years and older	
1. September 1, 1992	26.78	27.84	13.63	32,534
2. March 1, 1993	27.23*	26.42*	12.71*	31,888
3. September 1, 1993	25.74	23.80	7.53	31,072
4. March 1, 1994	21.15	23.41	4.75*	31,492

*Owing to varying probabilities of selection (see section on sampling), entry corresponds to average weight of sampled persons in the given age group and replicate.

To compensate for losses owing to screener nonresponse, the base weights were adjusted within broad classes defined by age group, race, and geography (Zip Code). Collapsing across Zip Codes was often necessary to ensure a minimum sample size of about 15 to 20 beneficiaries in each final weighting class. To calculate the required nonresponse adjustments, the sampled beneficiaries were assigned to one of the four screener response-status groups defined in Table A.3. Note that the screener nonrespondents were classified into one of two groups depending on their presumed eligibility for the screener. The type 1 nonrespondents included nonrespondents who were known not to have moved, been institutionalized, or died, while the type 2 nonrespondents included nonrespondents who may have moved, been institutionalized, or died.

Conceptually, the nonresponse adjustments were made in two stages. At the first stage of adjustment, the total weight of the type 2 nonrespondents in weighting class h was distributed in proportion to the remaining groups in the sample; that is, an initial adjusted weight for the i th screener respondent in class h was calculated as:

$$w_{hi}^{(1)} = w_{hi}^{base}\left(\frac{S_1 + S_2 + S_3 + S_4}{S_1 + S_3 + S_4}\right), \quad (1)$$

where w_{hi}^{base} is the base weight for the i th screener respondent in class h, and S_k is the sum of the base weights, summed over the n_{hk} sampled beneficiaries in response-status group k (k = 1, 2, 3, 4), where the four response-status groups are defined in Table A.3. In effect, a proportion of the type 2 nonrespondents was treated as eligible for the screener survey (i.e., have not moved, become institutionalized, or died), and the complementary proportion was considered to be out of scope (i.e., have moved, become institutionalized, or died).

At the second stage of adjustment, the previously adjusted weights of the screener respondents were further inflated to compensate for the type 1 respondents; that is, the final screener nonresponse-adjusted weight for the i th screener respondent in class h (whether or not the respondent qualified for the full baseline interview and nurse's examination) was calculated as

$$w_{hi}^{NR} = w_{hi}^{(1)}\left(\frac{S_1^* + S_2^*}{S_1^*}\right), \quad (2)$$

where S_k^* is the sum of the $w_{hi}^{(1)}$'s, summed over the n_{hk} sampled beneficiaries in response- status group k (k = 1, 2).

Note that the w_{hi}^{NR}'s defined by formula (2) are the appropriate weights for analyzing the screener survey data for any particular replicate.

Table A.3. Distribution of Sampled Persons by Screener Response Status and Replicate

Screener response status group	WHAS replicate				Total
	1	2	3	4	
1. Respondents: persons for whom a completed screener was obtained, whether or not the person qualified for the full baseline interview and nurse's exam	883	903	1,068	1,283	4,137
2. Type 1 Nonrespondents: persons for whom a completed screener was not obtained, but who have not died, been institutionalized, or moved.	169	210	257	380	1,016
3. Type 2 nonrespondents: persons for whom a completed screener was not obtained, but who may have died, been institutionalized, or moved.	33	28	38	64	163
4. Out of scope (ineligible for the screener): persons who died, were institutionalized, or moved out of the survey area.	280	224	284	417	1,205
Total unweighted count	1,365	1,365	1,647	2,144	6,521
Total weighted count of respondents (response status group 1) using final screener weights	26,506	27,230	27,016	27,309	---

Weighting the Examination Sample

Ordinarily, the weight for a person for whom an examination was conducted is equal to the nonresponse-adjusted weight, w_{hi}^{NR}. However, for various reasons, not all of those who qualified for the full baseline interview and nurse's examination completed the full assessment. To compensate for the examination nonrespondents, an additional adjustment was made within classes defined by

age group, number of domains of disability (2, 3, or 4), and Mini-Mental State Examination score (less than 25 or 25 or higher).

Specifically, let n_{g1} denote the number of persons in adjustment class g for whom examination data were obtained (examination "respondents"), and let n_{g2} denote the corresponding number of persons who qualified for the examination, but for whom examination data were not obtained (examination "nonrespondents"). The final examination weight for the i th respondent in adjustment class g was computed as

$$w_{gi}^{exam} = w_{gi}^{NR}\left(\frac{S_1^{\bullet\bullet} + S_2^{\bullet\bullet}}{S_1^{\bullet\bullet}}\right), \quad (3)$$

where $S_k^{\bullet\bullet}$ is the sum of the w_{gi}^{NR}'s, summed over the n_{gk} sampled beneficiaries in examination response-status group k (k = 1, 2). Table A.4 summarizes the numbers of examination respondents by replicate and age group, along with the corresponding weighted counts of respondents using the final examination weights.

Table A.4. Distribution of Examination Respondents by Replicate and Age Group*

Replicate	Unweighted count of baseline interview and examination respondents			Weighted sample count
	65 to 74 years	75 to 84 years	85 years and older	
1. September 1, 1992	89	79	44	8,611
2. March 1, 1993	103	77	43	8,766
3. September 1, 1993	77	77	89	7,796
4. March 1, 1994	119	78	127	9,554
Total	388	311	303	--

*Age group is based on the survey-reported age.

Estimates for All WHAS Replicates Combined

The sample-based estimates presented in this monograph were obtained by combining the weighted results from all WHAS replicates. The combined estimate therefore represents a

weighted average of the corresponding estimates for each of the four replicates. Specifically, let $\bar{x}_t$ denote the estimated mean value of a survey item, X, for WHAS replicate t; that is,

$$\bar{x}_t = \frac{\sum_{i=1}^{n_t} w_{ti}^{exam} x_{ti}}{\sum_{i=1}^{n_t} w_{ti}^{exam}}, \quad (4)$$

where x_{ti} is the observed value of X for respondent i in WHAS replicate t, w_{ti}^{exam} is the corresponding sampling weight for respondent i in WHAS replicate t, and n_t is the sample size (number of respondents) for WHAS replicate t. The corresponding estimate for all replicates combined, $\bar{x}_{comb}$, was then computed as

$$\bar{x}_t = \frac{\sum_{t=1}^{4}\sum_{i=1}^{n_t} w_{ti}^{exam} x_{ti}}{\sum_{t=1}^{4}\sum_{i=1}^{n_t} w_{ti}^{exam}}, \quad (5)$$

It should be noted that $\bar{x}_{comb}$ provides an unbiased estimate of the average population mean

$$\mu = \frac{\sum_{t=1}^{4} N_t \mu_t}{\sum_{t=1}^{4} N_t}, \quad (6)$$

where μ_t is the mean value of X for the eligible population of beneficiaries at time t (WHAS replicate t), and N_t is the corresponding size of the eligible population at time t. Each $\bar{x}_t$ estimates μ_t. In the 2-year period during which the WHAS was conducted, the N_t's did not vary importantly from replicate to replicate; thus, for all practical purposes, the weighting factor,

$$N_t \Big/ \sum_{t=1}^{4} N_t$$

was approximately 1/4 for all t.

Computation of Sampling Errors

Because the sample design for the WHAS was a stratified probability sample, variance estimation based on the assumption of simple random sampling is not appropriate (for example,

see Skinner et al., 1989). To properly reflect design features used in the WHAS such as stratification and systematic sampling, the sampling errors (or variances) of the survey-based estimates were calculated by a pseudo-replication method known as jackknife replication. Under jackknife replication, a specified number of systematic subsamples were generated from the full sample, and these in turn were used to define a series of jackknife replicates[1] by dropping one subsample at a time from the full sample. Each jackknife replicate was then reweighted using the weighting procedures developed for the full sample, and the resulting replicate-specific weights were attached to each data record to facilitate variance estimation. The advantage of the jackknife replication method is that it provides a relatively simple way of calculating the sampling errors of estimates from a complex sample design (for example, see McCarthy, 1966; Wolter, 1985).

Each jackknife replicate was formed as follows. The data from the selected women were first sorted by time period (i.e., by WHAS replicate). Within each time period they were sorted by age group and then by Zip Code within age group; that is, they were arranged in their sample selection order. A jackknife replicate was defined by leaving out every 31st sampled woman and increasing the weights of those retained by 31/30 so the weights add to the correct total. The rth jackknife replicate consisted of everyone *except* the rth, r + 31th, 2r + 31th, etc., women.

To illustrate how the sampling errors were computed, let $\bar{x}$ denote a weighted mean or proportion based on the full WHAS sample. Further, let $\bar{x}^{(r)}$ denote the corresponding estimate based on jackknife replicate r. The estimated variance of $\bar{x}$ was then computed from the formula

$$\mathrm{var}(\bar{x}) = \left(\frac{R-1}{R}\right)\sum\left(\bar{x}^{(r)} - \bar{x}\right)^2 , \quad (7)$$

where the summation extends over the R jackknife replicates defined for variance estimation. In practice, R is usually designed to be between 30 and 50; for the WHAS, R was set to 31. Note that the square root of $\mathrm{var}(x)$ is the standard error of $\bar{x}$.

WHAS Variance Estimation

Although the jackknife replication technique makes the estimation of the sampling variance of any statistic straightforward, the estimation process is computationally intensive. Standard statistical software does not provide a method for performing these computations; accordingly, it is necessary to use special-purpose programs in addition to programs that perform the analyses or tabulations. To reduce the work required to calculate sampling errors and to reduce the size of the publishing task for each estimate, an approximation of the standard error of an estimated

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[1]The term "jackknife replicate" should not be confused with the four "replicates" defined for WHAS. As described in this appendix, a jackknife replicate is simply a specially constructed subsample of the full WHAS sample.

population proportion or mean is frequently used. With the approximate method, analysts can use simple formulas to obtain approximate standard errors from the estimates themselves, while still accounting for the effects of a complex sample design.

To approximate the standard error for an estimated population proportion or mean, design effects based on the coefficient of variation of the sampling weights were calculated. A design effect expresses the efficiency of the design compared to simple random sampling and is defined to be the ratio of the variance of the estimate obtained from the WHAS sample to the variance of the estimate obtained from a simple random sample of the same sample size (Kish, 1965). Under simple random sampling, the variance of an estimate of a proportion is $p(1-p)/n$, where p is the proportion of the sample having the characteristic, and n is the sample size used in calculating the proportion. Thus, the standard error for an estimated proportion is approximately given by

$$SE(\hat{p}) = \sqrt{DEFF\,\frac{\hat{p}(1-\hat{p})}{n}}\ , \quad (8)$$

where SE is the standard error, $\hat{p}$ is the estimated population proportion, and $DEFF$ is the design effect.

Since the WHAS sample design was an unclustered, stratified probability sample design using sampling rates that varied by stratum and replicate (time), the design effect can be computed easily from the coefficient of variation of the sampling weights. For any subgroup of the sample, the $DEFF$ of the WHAS design is $DEFF = 1 + (cv_w)^2$ where cv_w is the coefficient of variation of the weights (Kish, 1992). Table A.5 shows the design effects due to variable weights, separately for the WHAS screener and the examination samples by age group.

Table A.5. Design Effects by Sample and Age Group

Age group (survey-reported)	Screener	Examination
65 to 74 years	1.013	1.019
75 to 84 years	1.015	1.024
85 years and older	1.313	1.302
Total	1.123	1.159

To assess the adequacy of the standard error approximation, unbiased estimates of variances using the jackknife replication technique were computed for a large number of statistics. The

statistical software procedure WESVAR (Westat, 1989) was used to compute the standard errors for estimates related to functioning domains, measured walks, functional reach, repeated chair stands, and walking aids. The approximate standard errors given by formula (8) were found to be comparable to the standard errors generated by the jackknife replication technique. Thus, the approximation provides an easy and efficient way for analysts to assess the sampling precision of the survey-based estimates presented in the monograph.

An example for computing the standard error for a percentage is illustrated using data on walking aids. For the examination sample, an estimated 39.9 percent of the 311 Medicare beneficiaries age 75 to 84 years reported they used a cane when they walked (i.e., $\hat{p} = 0.399$, where $\hat{p}$ is the weighted estimate). Using the design effect of 1.024 from Table A.5, the standard error can be computed as follows:

$$SE(\hat{p}) = \sqrt{\frac{(0.399)(0.601)}{311}(1.024)} = 0.0281 \text{ or } (2.81\%).$$

A 95 percent confidence interval for the percentage of persons age 75 to 84 years who use a cane can be constructed as

$$\hat{p} \pm 1.96 SE(\hat{p})$$

Substituting 39.9 percent for $\hat{p}$ and 2.81 percent for $SE(\hat{p})$, a 95 percent confidence interval for the percentage P of Medicare beneficiaries age 75 to 84 years who use a cane when they walk is $39.9 \pm 1.96(2.81)$, or $34.4 < P < 45.4$.

The 95 percent confidence interval can be interpreted as follows: under repeated sampling with the same sample design, approximately 95 percent of intervals constructed as above will contain the population value of P.

This procedure also can be used to compute standard errors and confidence intervals for means. The standard error for an estimated mean, $\bar{x}$, can be approximated using the following formula:

$$SE(\bar{x}) = \sqrt{DEFF \frac{s^2}{n}}, \quad (9)$$

where $\bar{x}$ is the estimated (weighted) mean of the variable x, $DEFF$ is the design effect shown in Table A.5, and s^2 is an estimate of the population variance of x. For example, s^2 can be estimated using the formula

$$\frac{\sum w_i \left[x_i - \left(\frac{\sum w_i x_i}{\sum w_i} \right) \right]^2}{\sum w_i} . \quad (10)$$

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Appendix B

Screening and Baseline Questionnaires

APPENDIX B

QUESTIONNAIRE CONTENTS

WOMEN'S HEALTH AND AGING STUDY

INTRODUCTION

IN1. YOU HAVE ENTERED ID NUMBER (ID NUMBER) FOR (PT'S NAME). IS THIS THE CORRECT CASE?

YES	1	(IN2)
NO	2	(BOX IN1)

(BOX IN1. RETURN TO MAIN MENU.)

IN2. I would like to verify your name. I have you listed as [READ FULL NAME LISTED BELOW VERIFY SPELLING.] Is this correct?

YES	1	(SINTROA)
NO	2	(IN3)

IN3. [MAKE NECESSARY CORRECTIONS.] [PRESS ENTER FOR FIELDS WITH NO CHANGES.]

IN4. [INTERVIEWER: IS THE PARTICIPANT CURRENTLY:]

NOT INSTITUTIONALIZED	1
INSTITUTIONALIZED	2

SCREENER

SINTROA. I'd like to begin with some questions about you.

S1. I have your date of birth listed as [BIRTH DATE]. Is that correct?

YES	1	(S2)
NO	2	

S1a. What is your date of birth?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY DATE FIELD IS MISSING (BASE.PTDOBMM, PTDOBDD OR PTDOBYY = -7 OR -8), THEN GO TO S3. OTHERWISE, GO TO S2.

S2. That makes you (AGE) today. Is that correct?

YES	1	(S3)
NO	2	(S1a)

S3. At the present time, would you say that your health is...

Excellent,	1
Very good,	2
Good,	3
Fair, or	4
Poor?	5
Refused	-7
Don't Know	-8

S4. Now I am going to read a list of serious illnesses and other health problems. For each one please tell me if a doctor has told you that you have that condition.

S4a. Has a doctor ever told you that you had a heart attack or myocardial infarction?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4b. (Has a doctor ever told you that you had...) angina?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4c. (Has a doctor ever told you that you had...) congestive heart failure?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4d. (Has a doctor ever told you that you had...) high blood pressure?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4e. (Has a doctor ever told you that you had...) any other heart disease?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4f. (Has a doctor ever told you that you had...) diabetes?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4g. (Has a doctor ever told you that you had...) arthritis?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4h. (Has a doctor ever told you that you had...) a stroke?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4i. (Has a doctor ever told you that you had...) cancer?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4j. (Has a doctor ever told you that you had...) a broken or fractured hip?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4k. (Has a doctor ever told you that you had...) Parkinson's disease?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4l. (Has a doctor ever told you that you had...) lung disease, such as emphysema or chronic bronchitis?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4m. (Has a doctor ever told you that you had...) hearing problems?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S4n. (Has a doctor ever told you that you had...) vision problems?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S5. Are you now married, or are you widowed, separated, divorced, or have you never been married?

MARRIED	1
WIDOWED	2
SEPARATED	3
DIVORCED	4
NEVER MARRIED	5
REFUSED	-7
DON'T KNOW	-8

S6. Which of the following best describes your race? Are you...

White,	1
Black,	2
American Indian or Alaskan Native,	3
Asian or Pacific Islander, or	4
Something else (SPECIFY)	91
_____	
Refused	-7
Don't Know	-8

S7. Is your main national origin or ancestry Hispanic?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

S8. What is the highest grade in school or year of college that you completed?

ELEMENTARY	
1st GRADE OR LESS	1
2nd GRADE	2
3rd GRADE	3
4th GRADE	4
5th GRADE	5
6th GRADE	6
7th GRADE	7
8th GRADE	8
HIGH SCHOOL	
1st YEAR	9
2nd YEAR	10
3rd YEAR	11
4th YEAR OR GED	12
COLLEGE & GRADUATE SCHOOL	
1 YEAR	13
2 YEARS	14
3 YEARS	15
4 YEARS	16
5 YEARS	17
6 YEARS OR MORE	18
OTHER (SPECIFY)	91
REFUSED	-7
DON'T KNOW	-8

SINTROB. Now, I'd like to ask about your household.

S9. Besides yourself, how many other people live in your household? [IF NONE, ENTER 0.]

_____ OTHER PEOPLE IN HOUSEHOLD

(SKIP: IF S9 = 0 THEN GO TO S11. OTHERWISE, GO TO S10.)

S10. Attachment S1.

What are the name of all persons living or staying in the household?

What is [NAME]'s relationship to you? Is [NAME] male or female? What is [NAME]'s age?

[2=SPOUSE, 3=SON, 4=DAUGHTER, 5=BROTHER, 6=SISTER, 7=FATHER, 8=MOTHER,
9=SON-IN-LAW, 10=DAUGHTER-IN-LAW, 11=GRANDSON, 12=GRANDDAUGHTER, 13=NEPHEW, 14=NIECE, 50=PARTNER/ROOMMATE, 51=FRIEND/NEIGHBOR,
52=BOARDER, 53=NURSE/ NURSE'S AIDE, 54=LEGAL/FINANCIAL OFFICER, 55=GUARDIAN, 91=OTHER RELATIVE, 92=OTHER NON-RELATIVE]

S11. Next I am going to ask about several activities. By yourself, that is without help from another person or special equipment, do you have any difficulty raising your arms up over your head?

YES	1	
NO	2	(S12)
REFUSED	-7	(S12)
DON'T KNOW	-8	(S12)

S11a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S12. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) using your fingers to grasp or handle?

YES	1	
NO	2	(S13)
REFUSED	-7	(S13)
DON'T KNOW	-8	(S13)

S12a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S13. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) lifting or carrying something as heavy as 10 pounds, for example a bag of groceries?

YES	1	
NO	2	(S14)
REFUSED	-7	(S14)
DON'T KNOW	-8	(S14)

S13a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S14. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) walking for a quarter of a mile, that is about 2 or 3 blocks?

YES	1	
NO	2	(S15)
REFUSED	-7	(S15)
DON'T KNOW	-8	(S15)

S14a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S15. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) walking up 10 steps without resting?

YES	1	
NO	2	(S16)
REFUSED	-7	(S16)
DON'T KNOW	-8	(S16)

S15a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S16. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) getting in and out of bed or chairs?

YES	1	
NO	2	(S17)
REFUSED	-7	(S17)
DON'T KNOW	-8	(S17)

S16a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S17. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) bathing or showering?

YES	1	
NO	2	(S18)
REFUSED	-7	(S18)
DON'T KNOW	-8	(S18)

S17a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S18. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) dressing?

YES	1	
NO	2	(S19)
REFUSED	-7	(S19)
DON'T KNOW	-8	(S19)

S18a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S19. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) eating, for example, holding a fork, cutting your food, or drinking from a glass?

YES	1	
NO	2	(S20)
REFUSED	-7	(S20)
DON'T KNOW	-8	(S20)

S19a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S20. (By yourself, that is without help from another person or special equipment, do you have any difficulty...) using the toilet, including getting to the toilet?

YES	1	
NO	2	(S21)
REFUSED	-7	(S21)
DON'T KNOW	-8	(S21)

S20a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

S21. Because of a health or physical problem, do you have any difficulty using the telephone by yourself?

YES	1	(S21a)
NO	2	(S23)
DOESN'T DO	3	(S22)
REFUSED	-7	(S23)
DON'T KNOW	-8	(S23)

S21a. By yourself, how much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

(SKIP: GO TO S23.)

S22. Is this for health reasons or other reasons?

HEALTH	1
OTHER REASONS (SPECIFY) _____	91
REFUSED	-7
DON'T KNOW	-8

S23. (Because of a health or physical problem, do you have any difficulty...) doing light housework such as doing dishes, straightening up or light cleaning by yourself?

YES	1	(S23a)
NO	2	(S25)
DOESN'T DO	3	(S24)
REFUSED	-7	(S25)
DON'T KNOW	-8	(S25)

S23a. By yourself, how much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

(SKIP: GO TO S25.)

S24. Is this for health reasons or other reasons?

HEALTH	1	
OTHER REASONS (SPECIFY)	91	
REFUSED	-7	
DON'T KNOW	-8	

S25. (Because of a health or physical problem, do you have any difficulty...) doing heavy housework such as washing windows, walls or floors?

YES	1	(S25a)
NO	2	(S27)
DOESN'T DO	3	(S26)
REFUSED	-7	(S27)
DON'T KNOW	-8	(S27)

S25a. How much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

(SKIP: GO TO S27.)

S26. Is this for health reasons or other reasons?

HEALTH	1	
OTHER REASONS (SPECIFY)	91	
REFUSED	-7	
DON'T KNOW	-8	

S27. (Because of a health or physical problem, do you have any difficulty...) preparing your own meals by yourself?

YES	1	(S27a0
NO	2	(S29)
DOESN'T DO	3	(S28)
REFUSED	-7	(S29)
DON'T KNOW	-8	(S29)

S27a. By yourself, how much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

(SKIP: GO TO S29.)

S28. Is this for health reasons or other reasons?

HEALTH	1	
OTHER REASONS (SPECIFY)	91	
REFUSED	-7	
DON'T KNOW	-8	

S29. (Because of a health or physical problem, do you have any difficulty...) shopping for personal items, such as toilet items or medicine, by yourself?

YES	1	(S29a)
NO	2	(SINTROC)
DOESN'T DO	3	(S30)
REFUSED	-7	(SINTROC)
DON'T KNOW	-8	(SINTROC)

S29a. By yourself, how much difficulty do you have? Would you say...

[HAND SHOW CARD BLUE TO RESPONDENT.]

(SKIP: GO TO SINTROC.)

S30. Is this for health reasons or other reasons?

HEALTH	1	
OTHER REASONS (SPECIFY)	91	
REFUSED	-7	
DON'T KNOW	-8	

SINTROC. Now I would like to ask you a few questions dealing with concentration and memory. They are routine questions we ask everyone, and may or may not apply to you directly. Some are a little more difficult than others.

S31. What is the year?

RIGHT	1
ERROR/REFUSAL	0

S32. What season of the year is it?

RIGHT	1
ERROR/REFUSAL	0

S33. What is the data?

RIGHT	1
ERROR/REFUSAL	0

S34. What is the day of the week?

RIGHT	1
ERROR/REFUSAL	0

S35. What is the month?

RIGHT	1
ERROR/REFUSAL	0

S36. Can you tell me where we are right now? For instance, what state are we in?

RIGHT..... 1
ERROR/REFUSAL..... 0

S37. What city are we in?

RIGHT..... 1
ERROR/REFUSAL..... 0

S38. What are two main streets nearby?

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S39. What floor of the building are we on?

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S40. (What is the address/What is the name of this place)?

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S41. I am going to name three objects. After I have said them, I want you to repeat them. Remember what they are because I am going to ask you to name them again in a few minutes. Please repeat these three items for me: [READ ITEMS LISTED BELOW.]

Apple.....Table.....Penny.

[INTERVIEWER: SCORE FIRST TRY. THEN REPEAT OBJECTS UNTIL ALL ARE LEARNED.]

a. Apple ( )
b. Table ( )
c. Penny ( )

RIGHT..... 1
ERROR/REFUSAL..... 0

S42. I am going to spell a word forwards and I want you to spell it backward. The word is world, W-O-R-L-D. Spell world backwards.
[REPEAT SPELLING IF NECESSARY, BUT NOT AFTER SPELLING STARTS.] [RECORD RESPONSE ON LINE PROVIDED, THEN PRESS ENTER.]
[CODE RESPONSE USING THE CATEGORIES BELOW.]

_____

( ) ( ) ( ) ( ) ( )
D L R O W

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S43. Now, what were the three objects I asked you to remember?

APPLE ( )
TABLE ( )
PENNY ( )

RIGHT..... 1
ERROR/REFUSAL..... 0

S44. What is this called? [SHOW WATCH TO RESPONDENT.]

WATCH ( )

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S45. What is this called? [SHOW PENCIL TO RESPONDENT.]

PENCIL ( )

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S46. I'd like you to repeat a phrase after me: [READ PHRASE BELOW. ALLOW ONLY ONE TRIAL.]

"No ifs, ands, or buts."

RIGHT..... 1
ERROR/REFUSAL..... 0

S47. Read the words on this page and then do what it says.

[HAND SHOW CARD A TO RESPONDENT.] [CODE "1" IF RESPONDENT CLOSES EYES.]

RIGHT..... 1
ERROR/REFUSAL..... 0
NOT ATTEMPTED..... SHIFT/7

S48. [READ FULL STATEMENT AND THEN HAND OVER THE PAPER. DO NOT REPEAT INSTRUCTIONS OR COACH.]

I'm going to give you a piece of paper. When I do, take the paper in your right hand, fold the paper in half with both hands, and put the paper down in your lap.

RIGHT HAND	( )
FOLDS PAPER WITH BOTH HANDS	( )
IN LAP	( )

RIGHT	1
ERROR/REFUSAL	0
NOT ATTEMPTED	SHIFT/7

S49. Write any complete sentence on that piece of paper for me. [SENTENCE MUST HAVE A SUBJECT AND A VERB, AND MAKE SENSE. SPELLING AND GRAMMAR ERRORS ARE OK.]

RIGHT	1
ERROR/REFUSAL	0
NOT ATTEMPTED	SHIFT/7

S50. Here is a drawing. Please copy the drawing on the same paper. [HAND SHOW CARD B TO RESPONDENT.] [CORRECT IF THE TWO FIVE-SIDED FIGURES INTERSECT TO FORM A FOUR-SIDED FIGURE AND IF ALL ANGLES IN THE FIVE-SIDED FIGURES ARE PRESERVED.]

RIGHT	1
ERROR/REFUSAL	0
NOT ATTEMPTED	SHIFT/7

S51. To get a picture of people's financial situation, we need to know the general range of income of all the people we interview. What was your household's total income from all sources, before taxes, in (YEAR)? Social Security, retirement income, job earnings, public assistance, help from relatives, rent from property, and any other income should be included.

$_____

(SKIP: IF S51 = -8 OR -7, GO TO S52. OTHERWISE, GO TO END.)

S52. Would you look at this card and tell me which letter represents your household's income for (YEAR)? Your best estimate would be fine. We are just looking for a general range.

[HAND SHOW CARD C TO RESPONDENT.]

BASELINE INTERVIEW

SECTION HH: HEALTH HABITS

HHINTROA. You have been selected to participate in our study. You represent thousands of women and the information which you give us will help the National Institutes of Health and Johns Hopkins University learn about the health conditions and needs of women like yourself. Therefore, your participation is very important.

Before we proceed further, I would like you to read and sign this consent form which will confirm that you have agreed to the interview and physical examination and that you give us permission to examine your medical records. Please take a moment to read the form. [READ CONSENT FORM ALOUD.]

HHINTROB. Now I have some questions about your health.

HH1. During the last 2 weeks or 14 days, did you stay in bed for more than half a day because of illness or injury?

YES	1	
NO	2	(HH3)
REFUSED	-7	(HH3)
DON'T KNOW	-8	(HH3)

HH2. During the last 2 weeks, how many days did you stay in bed more than half the day because of illness or injury? [IF IN HOSPITAL DURING THIS TIME, COUNT AS DAYS IN BED]

_____
DAYS IN BED

(SKIP: IF HH2 = 14 THEN GO TO HH5. OTHERWISE, GO TO HH3.)

HH3. (Not counting the days you spent in bed) (were/Were) there any (other) days when you cut down on the things you usually do because of illness or injury?

YES	1	
NO	2	(HH5)

HH4. How many days did you cut down, not counting those when you stayed in bed?

_____
DAYS CUT DOWN

HH5. Have you stayed overnight in a hospital during the past 12 months?

YES	1	
NO	2	(HH7)

HH6. How many nights did you stay overnight in the hospital during the past 12 months?

_____
NIGHTS IN HOSPITAL

HH7. Have you stayed in a nursing home during the past 12 months?

YES	1	
NO	2	(HH9)

HH8. Altogether, how many days did you stay in the nursing home (during the past 12 months)?

_____
DAYS IN NURSING HOME

HH9. In the last 6 months, have you seen a physical therapist?

YES	1	
NO	2	(HH10)

HH9a. How many times have you seen a physical therapist?

_____
NUMBER OF TIMES

HH10. In the last 6 months, have you seen an occupational therapist?

YES	1	
NO	2	(HH11)

HH10a. How many times have you seen an occupational therapist?

_____
NUMBER OF TIMES

HH11. In the last 6 months, have you seen a speech therapist?

YES	1	
NO	2	(HH12)

HH11a. How many times have you seen a speech therapist?

_____
NUMBER OF TIMES

HH12. In the last 6 months, have you seen a hearing therapist?

YES	1	
NO	2	(HH13)

HH12a. How many times have you seen a hearing therapist?

_____
NUMBER OF TIMES

HH13. In the last 6 months, have you discussed any personal problems with a psychiatrist, a psychologist, or any other mental health professional?

YES	1	
NO	2	(HH14)

HH13a. How many times have you discussed any personal problems with a psychiatrist, a psychologist, or any other mental health professional?

_____
NUMBER OF TIMES

HH14. In the last 6 months, have you seen a doctor in his or her office or a clinic or at your home?

YES	1	
NO	2	(HH15)

HH14a. How many times have you seen a doctor in his or her office or a clinic or at your home?

_____
NUMBER OF TIMES

HH15. In the last 6 months, have you received nursing services at home from someone such as a visiting nurse, home health aide, or nurse's aide?

YES	1	
NO	2	(HH16)

HH15a. How many times have you received nursing services at home from someone such as a visiting nurse, home health aide, or nurse's aide?

_____
NUMBER OF TIMES

HH16. Is there a regular doctor or a particular clinic, health center, doctor's office or other place that you usually go if you are sick or need advice about your health?

YES	1	(HH17)
NO	2	(HH16a)
REFUSED	-7	(HH16a)
DON'T KNOW	-8	(HH16a)

HH16a. Is there a place you go the most for medical advice or help?

YES	1	(HH17)
NO	2	(HH16b)
REFUSED	-7	(HH16b)
DON'T KNOW	-8	(HH16b)

HH16b. Have you been to a hospital, clinic, doctor's office or some other place for medical advice in the past five years?

YES	1	(HH17)
NO	2	(HH21)
REFUSED	-7	(HH21)
DON'T KNOW	-8	(HH21)

HH17. What kind of place is that -- a clinic, a health center, a hospital, a doctor's office, or some other place?

IF CLINIC ASK: Is this a hospital outpatieot clioic (OPD), a compaoy clioic, a health departmeot clinic or some other kind of clioic?
IF HEALTH CENTER ASK: Is this a health center run by the health departmeot, by a health maiotenance orgaoization (HMO), or by a group of doctors?
IF HOSPITAL ASK: Do you usually go to ao outpatieot clioic (OPD) or to an emergeocy room (ER)?
IF DOCTOR ASK: Is this a doctor io a clioic or hospital or does he have his own office?

HOSPITAL OUTPATIENT DEPARTMENT OR CLINIC	1
HOSPITAL EMERGENCY ROOM	2
COMPANY CLINIC	3
HEALTH DEPARTMENT CLINIC	4
COMMUNITY HEALTH CENTER	5
HMO (HEALTH MAINTENANCE ORGANIZATION)	6
PHYSICIAN OFFICE/GROUP	7
PARTICIPANT'S HOME	8
OTHER (SPECIFY)	91

HH17a. IF DOCTOR'S NAME NOT MENTIONED, ASK: Do you have a regular doctor there?

YES	1	
NO	2	(HH18)
REFUSED	-7	(HH18)
DON'T KNOW	-8	(HH18)

HH17b. What is his or her name?

[RECORD ON LIST OF PROVIDERS.] [ENTER ONLY ONE PROVIDER.]

[INTERVIEWER: AFTER THE PROVIDER NAME HAS BEEN COLLECTED TRANSFER THIS PROVIDER'S NUMBER TO THE SPACE PROVIDED BELOW.]

_____
PROVIDER NUMBER

HH18. What is the name of the place you ueually go to for medicel edvice?

[RECORD ON LIST OF PROVIDERS.] [ENTER ONLY ONE.]

[INTERVIEWER: AFTER THE FACILITY NAME HAS BEEN COLLECTED TRANSFER THIS FACILITY'S NUMBER TO THE SPACE PROVIDED BELOW.]

_____
FACILITY NUMBER

HH18a. What is (FACILITY)'s address?

[RECORD ADDRESS OF THIS FACILITY ON LIST OF PROVIDERS.]

[INTERVIEWER: AFTER THE ADDRESS HAS BEEN COLLECTED TRANSFER THE ADDRESS NUMBER TO THE SPACE PROVIDED BELOW.]

_____
ADDRESS NUMBER

HH21. Do you have any medicioes prescribed hy e doctor that you heve tekeo or used io the past 2 weeks? Pleese ioclude insulio and eye drops if you use them.

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HH22. We are also ioterested io other medicioes oot prescribed hy e doctor such es: aspirin, Tylenol, Bufferin, Anacio, headache pills or pain killers, laxatives, howel medicioe, cold medicine, cough medicioe, sleep medicioe, aotacids or stomach medicinee, vitamios, oiotments, salves, or eye drops, or any other medicioes from the drug etore. Duriog the past two weeks, did you take any medicioe oot prescribed hy a doctor?

[HAND SHOW CARD D TO RESPONDENT.]

YES	1	
NO	2	(HH25)
REFUSED	-7	(HH25)
DON'T KNOW	-8	(HH25)

(SKIP: IF HH21 AND HH22 = 2, -7 OR -8, GO TO HH25. OTHERWISE, GO TO HH23.)

HH23. May I see the medicioe hottles, cootaioers or hags for all of the medicioes that you have takeo or used io the last two weeks. Please ioclude medicine prescribed hy a doctor and medicioe oot preecribed hy a doctor. Pleaee remember to ioclude insulin and eye drops if you use them.

[RECORD ON MEDICINE ROSTER FORM.]

HH24. Are there other medicatioos that you have taken in the past two weeks that I have not seen?

YES	1	(HH23)
NO	2	(HH25)
REFUSED	-7	(HH25)
DON'T KNOW	-8	(HH25)

HH25. How old were you when you had your last menstrual period?

_____
AGE

HH26. Did your periods stop because of surgery, prescription medicine, radiation, or natural menopause?

SURGERY	1	
MEDICINE	2	
RADIATION	3	
NATURAL MENOPAUSE	4	
OTHER (SPECIFY)	91	
REFUSED	-7	
DON'T KNOW	-8	

HH27. Did you ever have surgery on your ovaries?

YES	1	
NO	2	(HH30)
REFUSED	-7	(HH30)
DON'T KNOW	-8	(HH30)

HH28. Have you had both ovaries removed?

YES	1	
NO	2	(HH30)
REFUSED	-7	(HH30)
DON'T KNOW	-8	(HH30)

HH29. How old were you at the time (your ovaries were/your last ovary was) removed?

_____
AGE

HH30. Have you had a flu shot in the past year?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HH31. In the last year have you...

Lost weight,	1	
Gained weight,	2	
Both lost and gained weight, or	3	
Had no change in weight?	4	(HH34)
REFUSED	-7	(HH34)
DON'T KNOW	-8	(HH34)

HH32. Did you (gain/lose) weight because you were trying to, or not? (For example, by dieting or exercising).

TRIED TO	1
DID NOT TRY TO	2
REFUSED	-7
DON'T KNOW	-8

HH33. Was surgery, illness, or medication a major factor in your weight change?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HH34. What was your usual weight at age 60?

_____
POUNDS

HH35. Would you say your appetite is usually...

Very good,	1
Good,	2
Fair, or	3
Poor?	4
REFUSED	-7
DON'T KNOW	-8

HH36. Do you wear dentures?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HH37. Do you have problems chewing or swallowing that limit your ability to eat?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HH38. Which of the following best describes your current cigarette smoking status? [READ LIST.]

You never smoked,	1	(HH41)
You are a former smoker who quit more than 1 year ago,	2	
You are a former smoker who quit 1 year ago or less, or	3	
You are a current smoker?	4	

HH39. On average, how many cigarettes (do/did) you smoke per day?

_____
CIGARETTES PER DAY

HH40. For how many yeers (heve/did) you smoke(d)?

_____
YEARS

HH41. Do you usuelly drink elcoholic bevereges, including beer, wine, sherry, or liquor, et leest once every week?

YES	1	
NO	2	(ARINTRO)
REFUSED	-7	(ARINTRO)
DON'T KNOW	-8	(ARINTRO)

HH42. On the deys when you drink, about how many drinks do you usually have?

_____
DRINKS PER DAY

HH43. Over the pest 6 months, how many deys per week did you typically drink like this?

_____
DAYS PER WEEK

SECTION AR: ARTHRITIS

ARINTRO. Next, I heve some questions about your health.

(SKIP: IF S4g (HRND.SCRARTHS) = 2, -7 OR -8, SET HRND.BASARTHR = 2, THEN GO TO AR2. OTHERWISE, GO TO AR1.)

AR1. Eerlier you mentioned thet e doctor hes told you that you heve erthritis.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET AR1 (HRND.BASARTHR) = 1, THEN GO TO AR2. IF 2 SET AR1 (HRND.BASARTHR) = 2, THEN GO TO AR2.)

AR2. Are you currently being treeted or teking medicetion for erthritis?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR1 (HRND.BASARTHR) AND AR2 (HRND.TRETARTH) = 2, -7 OR -8, THEN GO TO AR12. IF AR1 (HRND.BASARTHR) = 1 AND AR2 (HRND.TRETARTH) = 2, -7 OR -8, THEN GO TO AR5. OTHERWISE, GO TO AR3.)

AR3. Whet is the name of the doctor who is treeting you or prescribing your medicine?

[RECORD ON LIST OF PROVIDERS.] [ENTER ONLY ONE PROVIDER.]

[INTERVIEWER: AFTER THE PROVIDER NAME HAS BEEN COLLECTED TRANSFER THIS PROVIDER'S NUMBER TO THE SPACE PROVIDED BELOW.]

_____
PROVIDER NUMBER

AR4. What is (PROVIDER)'e eddress?

[RECORD ADDRESS OF THIS PROVIDER ON LIST OF PROVIDERS.]

[INTERVIEWER: AFTER THE ADDRESS HAS BEEN COLLECTED TRANSFER THE ADDRESS NUMBER TO THE SPACE PROVIDED BELOW.]

_____
ADDRESS NUMBER

AR5. Which type of erthritis do you heve? Is it...

Rheumatoid erthritis,	1
Osteoerthritis or degeneretive erthritis,	2
Or some other type? (SPECIFY)	91
REFUSED	-7
DON'T KNOW	-8

AR5e. How old were you when you were first told that you had arthritis?

_____
YEARS OLD

AR6. Heve you ever hed eny operetions for treetment of your arthritis?

YES	1	
NO	2	(AR12)
REFUSED	-7	(AR12)
DON'T KNOW	-8	(AR12)

AR7e. Which joints or erees were operated on? Wes your right hand or wrist operated on?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR7b. (Which joints or erees were operated on?) Wes your left hand or wrist operated on?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR7c. (Which joints or areas were operated on?) Was your right hip operated on?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR7d. (Which joints or areas were operated on?) Was your left hip operated on?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR7e. (Which joints or areas were operated on?) Was your right knee operated on?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR7f. (Which joints or areas were operated on?) Was your left knee operated on?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR7g. Were any other joints or areas operated on?

OTHER (SPECIFY) _____	91
NO	2
REFUSED	-7
DON'T KNOW	-8

AR8. What was the name of the hospital where you had the most recent surgery?

[RECORD ON LIST OF PROVIDERS.] [ENTER ONLY ONE HOSPITAL.]

[INTERVIEWER: AFTER THE FACILITY NAME HAS BEEN COLLECTED TRANSFER THIS FACILITY'S NUMBER TO THE SPACE PROVIDED BELOW.]

_____
FACILITY NUMBER

AR9. What is (FACILITY)'s address?

[RECORD ADDRESS OF THIS FACILITY ON LIST OF PROVIDERS.]

[INTERVIEWER: AFTER THE ADDRESS HAS BEEN COLLECTED TRANSFER THE ADDRESS NUMBER TO THE SPACE PROVIDED BELOW.]

_____
ADDRESS NUMBER

AR10. When were you admitted to the hospital for the surgery?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO AR11. OTHERWISE, GO TO AR12.)

AR11. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

AR12. Has a doctor ever told you that you had osteoporosis or thinning of the bones?

YES	1	
NO	2	(BOX AR5)
REFUSED	-7	(BOX AR5)
DON'T KNOW	-8	(BOX AR5)

AR13. Are you currently being treated for osteoporosis?

YES	1	
NO	2	(BOX AR5)
REFUSED	-7	(BOX AR5)
DON'T KNOW	-8	(BOX AR5)

AR14. What is the name of the doctor who is treating you? (See AR3.)

AR15. What is (PROVIDER)'s address? (Same as AR4.)

BOX AR5: IF S4j (HRND.SCRFXHIP) = 2, -7 OR -8, THEN GO TO AR23. OTHERWISE, GO TO AR16.

AR16. Earlier you mentioned that a doctor has told you that you had broken or fractured your hip.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET AR16 (HRND.BASFXHIP) = 1, THEN GO TO AR17. IF 2 SET AR16 (HRND.BASFXHIP) = 2, THEN GO TO AR23.)

AR17. Which hip did you break?

LEFT HIP	1
RIGHT HIP	2
BOTH HIPS	3
REFUSED	-7
DON'T KNOW	-8

AR18. Were you hospitelized for treetment of your broken hip(s)?

YES	1	
NO	2	(AR23)
REFUSED	-7	(AR23)
DON'T KNOW	-8	(AR23)

AR19. Whet is the name of the hospitel where you were hospitelized for treetment of your (most recent) broken hip? (See AR8.)

AR20. Whet is (FACILITY)'s eddress? (Same es AR9.)

AR21. When were you edmitted to the hospitel?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO AR22. OTHERWISE, GO TO AR23.)

AR22. When were you discherged?

_____/_____/_____
MONTH DAY YEAR

AR23. Since the ege of 50, hes e doctor ever told you thet you had broken or frectured your wrist or erm?

YES	1	
NO	2	(AR25)
REFUSED	-7	(AR25)
DON'T KNOW	-8	(AR25)

AR24. Whet wes the dete of this (most recent) broken wrist or erm?

_____/_____/_____
MONTH DAY YEAR

AR25. Hes e doctor ever x-reyed you end told you that you hed a compression fracture or collepsed or crushed vertebree?

YES	1	
NO	2	(AR27)
REFUSED	-7	(AR27)
DON'T KNOW	-8	(AR27)

AR26. How old were you when you were first told thet you had e compression fracture?

_____
YEARS OLD

AR27. Since the ege of 50, has e doctor ever told you thet you hed broken or frectured eny other bones?

YES	1	
NO	2	(AR29)
REFUSED	-7	(AR29)
DON'T KNOW	-8	(AR29)

AR28. Which hones did you hreek or fracture? (What was the dete of this fracture?)
[ENTER ONE FRACTURE TO A LINE.]

BONE(S)	(DATE(S)) MONTH	DAY	YEAR
_____	_____/	_____/	_____
_____	_____/	_____/	_____
_____	_____/	_____/	_____
_____	_____/	_____/	_____

AR29. Hes e doctor ever told you thet you had a degenerated, slipped or herniated disc or sciatica?

YES	1	
NO	2	(AR42)
REFUSED	-7	(AR42)
DON'T KNOW	-8	(AR42)

AR30. Are you currently heing treeted hy e doctor for your degenereted, slipped, or hernieted disc or scietice?

YES	1	
NO	2	(AR33)
REFUSED	-7	(AR33)
DON'T KNOW	-8	(AR33)

AR31. Whet is the name of the doctor who is treeting you? (See AR3.)

AR32. Whet is (PROVIDER)'s eddress? (Same es AR4.)

(SKIP: IF AR30 = 1, THEN GO TO AR35.)

AR33. Whet is the name of the lest doctor you sew for you degenereted, slipped, or hernieted disc or scietice? (See AR3.)

AR34. Whet is (PROVIDER)'s eddress? (Same es AR4.)

AR35. Did you heve surgery for treetment of your degenereted, slipped, or hernieted disc or scietice?

YES	1	
NO	2	(AR38)
REFUSED	-7	(AR38)
DON'T KNOW	-8	(AR38)

AR35e. Whet wes the name of the hospitel where you hed your (most recent) surgery for your degenereted, slipped, or hernieted disc or scietice? (See AR8.)

AR35h. Whet is (FACILITY)'s eddress? (Same es AR9.)

AR36. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO AR37. OTHERWISE, GO TO AR38.)

AR37. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

AR38. Were you ever hospitalized for your degenerated, slipped, or herniated disc or sciatica (other than when you had surgery)?

YES	1	
NO	2	(AR42)
REFUSED	-7	(AR42)
DON'T KNOW	-8	(AR42)

AR39. What was the name of the hospital where you were (most recently) hospitalized for your degenerated, slipped, or herniated disc or sciatica (other than when you had surgery)? (See AR8.)

AR40. What is (FACILITY)'s address? (Same as AR9.)

AR41. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO AR41a. OTHERWISE, GO TO AR42.)

AR41a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

AR42. Has a doctor ever told you that you had spinal stenosis?

YES	1	
NO	2	(AR54)
REFUSED	-7	(AR54)
DON'T KNOW	-8	(AR54)

AR43. Are you currently being treated by a doctor for spinal stenosis?

YES	1	
NO	2	(AR46)
REFUSED	-7	(AR46)
DON'T KNOW	-8	(AR46)

AR44. What is the name of the doctor who is treating your spinal stenosis? (See AR3.)

AR45. What is (PROVIDER)'s address? (Same as AR4.)

(SKIP: IF AR43 = 1, THEN GO TO AR48.)

AR46. What was the name of the last doctor you saw for your spinal stenosis? (See AR3.)

AR47. What is (PROVIDER)'s address? (Same as AR4.)

AR48. Did you have surgery for treatment of spinal stenosis?

YES	1	
NO	2	(AR53)
REFUSED	-7	(AR53)
DON'T KNOW	-8	(AR53)

AR49. What was the name of the hospital where you had your (most recent) surgery for your spinal stenosis? (See AR8.)

AR50. What is (FACILITY)'s address? (Same as AR9.)

AR51. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO AR52. OTHERWISE, GO TO AR53.)

AR52. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

AR53. Were you ever hospitalized for spinal stenosis (other than when you had surgery)?

YES	1	
NO	2	(AR54)
REFUSED	-7	(AR54)
DON'T KNOW	-8	(AR54)

AR53a. What was the name of the hospital where you were (most recently) hospitalized for spinal stenosis (other than when you had surgery)? (See AR8.)

AR53b. What is (FACILITY)'s address? (Same as AR9.)

AR53c. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO AR53d. OTHERWISE, GO TO AR54.)

AR53d. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

AR54. During the past year, have you had pain, aching or discomfort in your hands or wrists on most days for at least one month?

YES	1	
NO	2	(AR56)
REFUSED	-7	(AR56)
DON'T KNOW	-8	(AR56)

AR55. Please show me on this chart which joints in your hands, fingers, or wrists have been painful.

(HAND SHOW CARD E TO RESPONDENT.) (CODE ALL THAT APPLY.)

AR56. Have you had (this/any) pain in your hands or wrists during the past month?

YES	1	
NO	2	(AR58)
REFUSED	-7	(AR58)
DON'T KNOW	-8	(AR58)

AR57. Using this card, please rate the average pain in your hands or wrists during the past month by giving me a number from 0 to 10, where 0 is no pain and 10 is severe or excruciating pain, as bad as you can imagine.

(HAND SHOW CARD F TO RESPONDENT.)

_____
SEVERITY OF PAIN CATEGORY

AR58. Have you ever had any swelling with aching or tenderness in your hands or wrists on most days for <u>at least six weeks</u>?

YES	1	
NO	2	(AR60)
REFUSED	-7	(AR60)
DON'T KNOW	-8	(AR60)

AR59. Please show me on this chart which joints in your hands, fingers, or wrists have been swollen.

(HAND SHOW CARD E TO RESPONDENT.) (CODE ALL THAT APPLY.)

AR60. Have you ever had stiffness in your hands or wrists when first getting up in the morning on most days for at least six weeks?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR61. Have you had (this/any) stiffness in your hands or wrists in the last month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR60 AND AR61 = 2, -7 OR -8, THEN GO TO AR63. OTHERWISE, GO TO AR62.)

AR62. On the average, how long after getting up in the morning and moving around does the morning stiffness in your hands or wrists last? Would you say...

Less than 15 minutes,	1
15 to 30 minutes,	2
30 minutes to 1 hour, or	3
More than 1 hour?	4
REFUSED	-7
DON'T KNOW	-8

AR63. During the past year, have you had pain, aching or discomfort in your knees on most days for at least one month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR64. Have you had (this/any) pain in your knees during the past month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR63 AND AR64 = 2, -7 OR -8, THEN GO TO AR70. OTHERWISE, GO TO AR65.)

AR65. When the knee pain is present, where is it most intense? In the...

Right knee	1
Left knee, or	2
Both?	3
REFUSED	-7
DON'T KNOW	-8

AR66. Have you ever had any swelling with aching or tenderness in your knees on most days for at least six weeks?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR67. Have you ever had stiffness in your knees when first getting up in the morning on most days for at least six weeks?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR68. Has stiffness in your knees occurred in the last month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR67 AND AR68 = 2, -7 OR -8, THEN GO TO AR70. OTHERWISE, GO TO AR69.)

AR69. On the average, how long after getting up in the morning and moving around does the morning stiffness in your knees last? Would you say...

Less than 15 minutes,	1
15 to 30 minutes,	2
30 minutes to 1 hour, or	3
More than 1 hour?	4
REFUSED	-7
DON'T KNOW	-8

AR70. Have you ever had an x-ray taken of your knees?

YES	1	(AR70a)
NO	2	(AR71)
REFUSED	-7	(AR71)
DON'T KNOW	-8	(AR71)

AR70a. When was this done most recently?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF CURRENT YEAR - XRAYYY > 5, THEN GO TO AR71. OTHERWISE, GO TO AR70b.)

AR70b. What was the name of the doctor who ordered this x-ray? (See AR3.)

AR70c. What is (PROVIDER)'s address? (Same as AR4.)

AR71. During the past year, have you had pain, aching or discomfort in your hips on most days for at least one month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR72. Have you had (this/any) pain in your hips during the past month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR71 AND AR72 = 2, -7 OR -8, THEN GO TO AR76a. OTHERWISE, GO TO AR73.)

AR73. When the hip pain is present, where is it most intense? In the...

Right hip	1
Left hip, or	2
Both?	3
REFUSED	-7
DON'T KNOW	-8

AR74. Have you ever had stiffness in your hips when first getting up in the morning on most days for at least six weeks?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR75. Has stiffness in your hips occurred in the last month?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR74 AND AR75 = 2, -7 OR -8, THEN GO TO AR76a. OTHERWISE, GO TO AR76.)

AR76. On the average, how long after getting up in the morning and moving around does the morning stiffness in your hips last? Would you say...

Less than 15 minutes,	1
15 to 30 minutes,	2
30 minutes to 1 hour, or	3
More than 1 hour?	4
REFUSED	-7
DON'T KNOW	-8

AR76a. Have you ever had ao x-ray takeo of your hips?

YES	1	(AR76b)
NO	2	(BOX AR19)
REFUSED	-7	(BOX AR19)
DON'T KNOW	-8	(BOX AR19)

AR76b. When was this dooe most recently?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF CURRENT YEAR - XRAYYY > 5, THEN GO TO BOX AR19. OTHERWISE, GO TO AR76c.)

AR76c. What was the oame of the doctor who ordered this x-ray? (See AR3.)

AR76d. What is (PROVIDER)'s address? (Same ss AR4.)

BOX AR19: IF AR64 OR AR72 = 1, THEN GO TO AR77a. OTHERWISE, GO TO AR78.

AR77a. Usiog this card, please rate the average paio io your (knees) (aod) (hips) during tha past mooth by giviog me a number from 0 - 10, where 0 is no pain aod 10 is severe or excruciating paio, as bad as you can imagioe How would you rate the paio wheo you are walkiog oo a flat surface?

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

AR77b. (Usiog this card, please rate the average pain in your (knees) (aod) (hips) duriog the past mooth by giviog me a number from 0 - 10, where 0 is oo paio aod 10 is severe or excruciatiog psio, as had as you cao imagioa.) How would you rate tha paio wheo you are going up or down stairs?

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

AR77c. (Usiog this card, please rate the average paio io your (kneas) (and) (hips) during tha past mooth by giving me a number from 0 - 10, where 0 is oo paio and 10 is savere or excruciatiog paio, as had as you cao imagioa.) How would you rate the paio when you are io hed at oight?

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

AR77d. (Usiog this card, please rate the average paio io your (kneas) (aod) (hips) duriog the past mooth by giviog me a oumber from 0 - 10, where 0 is oo paio aod 10 is severe or excruciatiog psin, as had ss you cao imagine.) How would you rate the paio wheo you are sitting or lyiog down?

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

AR77e. (Usiog this card, please rate the average paio io your (knaas) (and) (hips) during the past month by giving me a number from 0 - 10, where 0 is oo paio and 10 is severe or excruciatiog paio, as had as you cao imagioe.) How would you rata the paio when you are standiog upright?

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

AR78. During the past year, have you had pain, aching or discomfort io your feat oo most days for at least ooe mooth?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR79. During the past mooth have you had (this/any) pain io your faat?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF AR78 AND AR79 = 2, -7 OR -8, THEN GO TO AR86. OTHERWISE, GO TO AR80.)

AR80. Usiog this card, please rate the average pain io your feet during the past month by giving me a number from 0 to 10, where 0 is no pain and 10 is severe or excruciatiog paio, as bad as you can imagioe.

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

AR81. Have you ever had any swelliog with aching or tenderness io your feet oo most days for at least six weeks?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR83. Have you ever had stiffness in your feet when first gettiog up in the morning on most days for at least six weeks?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AR84. Has stiffness in your feet occurred in the last month?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF AR83 AND AR84 = 2, -7 OR -8, THEN GO TO AR86. OTHERWISE, GO TO AR85.)

AR85. On the average, how long after getting up in the morning and moving around does the morning stiffness in your feet last? Would you say...

Less than 15 minutes,	1	
15 to 30 minutes,	2	
30 minutes to 1 hour, or	3	
More than 1 hour?	4	
REFUSED	-7	
DON'T KNOW	-8	

AR86. During the past year, have you had pain in your lower back on most days for at least one month?

YES	1	
NO	2	(BOX HE1)
REFUSED	-7	(BOX HE1)
DON'T KNOW	-8	(BOX HE1)

AR87. Using this card please rate the average pain in your back during the past month by giving me a number from 0 to 10, where 0 is no pain and 10 is severe or excruciating pain, as bad as you can imagine.

[HAND SHOW CARD F TO RESPONDENT.]

_____
SEVERITY OF PAIN CATEGORY

SECTION HE: HEART DISEASE AND DIABETES

BOX HE1: IF S4a (HRND.SCRMYOCR) = 2, -7 OR -8, THEN GO TO BOX HE4. OTHERWISE, GO TO HE1.

HE1. Earlier you mentioned that a doctor has told you that you had a heart attack or myocardial infarction.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

SKIP: IF 1 SET HE1 (HRND.BASMYOCR) = 1, THEN GO TO HE2. IF 2 SET HE1 (HRND.BASMYOCR) = 2, THEN GO TO BOX HE4.

HE2. How many heart attacks or myocardial infarctions have you had?

_____
INFARCTIONS/HEART ATTACKS

(SKIP: IF HE2 (COND.EPISDNUM) = 1, -7 OR -8, GO TO HE3a. OTHERWISE, GO TO HE3.)

HE3. In what month and year was your first heart attack or myocardial infarction?

_____/_____
MONTH YEAR

HE3a. In what month and year was your (most recent) heart attack or myocardial infarction?

_____/_____
MONTH YEAR

HE4. What was the name of the doctor who told you that you had (a/your most recent) heart attack or myocardial infarction? (See AR3.)

HE4a. What is (PROVIDER)'s address? (Same as AR4.)

HE5. Were you hospitalized for your (most recent) heart attack or myocardial infarction?

YES	1	
NO	2	(BOX HE4)
REFUSED	-7	(BOX HE4)
DON'T KNOW	-8	(BOX HE4)

HE6. What was the name of the hospital where you were hospitalized? (See AR8.)

HE6a. What is (FACILITY)'s address? (Same as AR9.)

BOX HE4: IF S4b (HRND.SCRANGNA) = 2, -7 OR -8, THEN GO TO BOX HE6A. OTHERWISE, GO TO HE7.

HE7. Earlier you mentioned that a doctor has told you that you had angina or chest pain due to heart disease.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET HE7 (HRND.BASANGNA) = 1, THEN GO TO HE8. IF 2 SET HE7 (HRND.BASANGNA) = 2, THEN GO TO BOX HE6A.)

HE8. In what month and year were you first told that you had angina?

_____/_____
MONTH YEAR

HE9. Were you ever hospitalized for angina or chest pain?

YES	1	
NO	2	(HE12)
REFUSED	-7	(HE12)
DON'T KNOW	-8	(HE12)

HE10. What was the name of the hospital where you were most recently hospitalized for your angina or chest pain? (See AR8.)

HE10a. What is (FACILITY)'s address? (Same as AR9.)

HE11. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO HE11a. OTHERWISE, GO TO HE12.)

HE11a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

HE12. What was the name of the doctor who told you that you had engina? (See AR3.)

HE12a. What is (PROVIDER)'s address? (Same as AR4.)

HE13. Are you currently being treated by a doctor for angina?

YES	1	
NO	2	(BOX HE6A)
REFUSED	-7	(BOX HE6A)
DON'T KNOW	-8	(BOX HE6A)

HE14. What is the name of the doctor who is currently treating you? (See AR3.)

HE14a. What is (PROVIDER)'s address? (Same as AR4.)

BOX HE6A: IF S4c (HRND.SCRCHF) = 2, -7 OR -8, THEN GO TO HE23. OTHERWISE, GO TO HE15.

HE15. Earlier you mentioned that a doctor has told you that you had heart failure or congestive heart failure.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET HE15 (HRND.BASCHF) = 1, THEN GO TO HE16. IF 2 SET HE15 (HRND.BASCHF) = 2, THEN GO TO HE23.)

HE16. In what month and year were you first told that you had congestive heart failure?

_____/_____
MONTH YEAR

HE17. Are you currently being treated by a doctor for congestive heart failure?

YES	1	
NO	2	(HE19)
REFUSED	-7	(HE19)
DON'T KNOW	-8	(HE19)

HE18. What is the name of the doctor who is treating you? (See AR3.)

HE18a. What is (PROVIDER)'s address? (Same as AR4.)

HE19. Were you ever hospitalized for congestive heart failure?

YES	1	
NO	2	(HE23)
REFUSED	-7	(HE23)
DON'T KNOW	-8	(HE23)

HE20. How many times have you been hospitalized for congestive heart failure in the last year?

_____
TIMES

HE21. What was the name of the hospital where you were (most recently) hospitalized for congestive heart failure? (See AR8.)

HE21a. What is (FACILITY)'s address? (Same as AR9.)

HE22. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO HE22a. OTHERWISE, GO TO HE23.)

HE22a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

HE23. Has a doctor ever told you that you had intermittent claudicstion or pain in your legs from blockage of the arteries (peripheral vascular disease or atherosclerosis)?

YES	1	
NO	2	(HE31)
REFUSED	-7	(HE31)
DON'T KNOW	-8	(HE31)

HE24. In what month and year were you first told that you had intermittent claudication?

_____/_____
MONTH YEAR

HE25. Are you currently being treated by a doctor for intermittent claudication?

YES	1	
NO	2	(HE27)
REFUSED	-7	(HE27)
DON'T KNOW	-8	(HE27)

HE26. What is the name of the doctor who is treating you? (See AR3.)

HE26a. What is (PROVIDER)'s address? (Same as AR4.)

(SKIP: IF HE25 (COND.TRETCOND) = 1, THEN GO TO HE28.)

HE27. What was the name of the last doctor you saw for your intermittent claudication? (See AR3.)

HE27a. What is (PROVIDER)'s address? (Same as AR4.)

HE28. Were you ever hospitalized for intermittent claudication?

YES	1	
NO	2	(HE31)
REFUSED	-7	(HE31)
DON'T KNOW	-8	(HE31)

HE29. What was the name of the hospital where you were most recently hospitalized for intermittent claudication? (See AR8.)

HE29a. What is (FACILITY)'s address? (Same as AR9.)

HE30. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO HE30a. OTHERWISE, GO TO HE31.)

HE30a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

HE31. Have you ever had surgery on the arteries in your legs?

YES	1	
NO	2	(HE34)
REFUSED	-7	(HE34)
DON'T KNOW	-8	(HE34)

HE32. What was the name of the hospital where you most recently hospitalized had surgery on the arteries in your leg? (See AR8.)

HE32a. What is (FACILITY)'s address? (Same as AR9.)

HE33. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO HE33a. OTHERWISE, GO TO HE34.)

HE33a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

HE34. Have you ever had a toe, foot or leg amputated?

YES	1	
NO	2	(BOX HE12)
REFUSED	-7	(BOX HE12)
DON'T KNOW	-8	(BOX HE12)

HE35. What was the name of the hospital where you most recently had a toe, foot or leg amputated? (See AR8.)

HE35a. What is (FACILITY)'s address? (Same as AR9.)

HE36. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO HE36a. OTHERWISE, GO TO HE37.)

HE36a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

BOX HE12: IF S4d (HRND.SCRHBP) = 2, -7 OR -8, THEN GO TO BOX HE14. OTHERWISE, GO TO HE37.

HE37. Earlier you mentioned that a doctor has told you that you have high blood pressure.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET HE37 (HRND.BASHBP) = 1, THEN GO TO HE38. IF 2 SET HE37 (HRND.BASHBP) = 2, THEN GO TO BOX HE14.)

HE38. How old were you when you were first told that you have high blood pressure?

_____
YEARS OLD

BOX HE14: IF S4f (HRND.SCRDIABS) = 2, -7 OR -8, THEN GO TO HE40. OTHERWISE, GO TO HE39.

HE39. Earlier you mentioned that a doctor has told you that you had diabetes.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET HE39 (HRND.BASDIABS) = 1, THEN GO TO HE39a. IF 2 SET HE39 (HRND.BASDIABS) = 2, THEN GO TO HE40.)

HE39a. How old were you when you were first told that you had diabetes?

_____
YEARS OLD

HE39b. Are you currently being treated by a doctor for diabetes?

YES	1	
NO	2	(HE39e)
REFUSED	-7	(HE39e)
DON'T KNOW	-8	(HE39e)

HE39c. What is the name of the doctor who is treating you? (See AR3.)

HE39d. What is (PROVIDER)'s address? (See AR4.)

(SKIP: IF HE39b (COND.TRETCOND) = 1, THEN GO TO HE40.)

HE39e. What was the name of the last doctor you saw for your diabetes? (Similar to AR3.)

HE39f. What is (PROVIDER)'s address? (Same as AR4)

HE40. Has a doctor ever told you that you had rheumatic heart or heart valve problems?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

HE41. Have you ever had coronary artery bypass surgary?

YES	1	
NO	2	(HE43)
REFUSED	-7	(HE43)
DON'T KNOW	-8	(HE43)

HE42. When were you most recently operated on?

_____/_____/_____
MONTH DAY YEAR

HE43. Do you have a cardiac pacemaker implent?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

HE44. Have you ever had a carotid endarterectomy, which is surgery on the blood vessels in your neck?

YES	1	
NO	2	(HE46)
REFUSED	-7	(HE46)
DON'T KNOW	-8	(HE46)

HE45. When did you have your most recent carotid endarterectomy?

_____/_____/_____
MONTH DAY YEAR

HE46. Have you ever had any pain or discomfort in your chest?

YES	1	
NO	2	(HE67)
REFUSED	-7	(HE67)
DON'T KNOW	-8	(HE67)

HE47. Do you get this pain or discomfort when you walk uphill or hurry?

YES	1	
NO	2	(HE62)
DON'T WALK UPHILL OR HURRY	3	
REFUSED	-7	
DON'T KNOW	-8	

HE48. Do you get it when you walk at an ordinary pace on the level?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF HE47 = 3, -7 OR -8 AND HE48 = 2, -7 OR -8, THEN GO TO HE62. OTHERWISE, GO TO HE49.)

HE49. How many blocks of walking brings on your chest pain? [ENTER '0' IF LESS THAN ONE BLOCK.]

_____
BLOCKS

HE50. What do you do if you get it while you are out walking?

STOP OR SLOW DOWN	1	
TAKE NITROGLYCERINE AND CONTINUE AT SAME PACE	2	
CONTINUE AT SAME PACE	3	
REFUSED	-7	
DON'T KNOW	-8	
OTHER (SPECIFY)	91	

_____

HE51. If you stand still, what happens to it? Does it get better or not?

GETS BETTER	1	
DOES NOT GET BETTER	2	(HE53)
REFUSED	-7	(HE53)
DON'T KNOW	-8	(HE53)

HE52. How soon does it get better?

10 MINUTES OR LESS	1
MORE THAN 10 MINUTES	2
REFUSED	-7
DON'T KNOW	-8

HE53. Please show me the places where you get this pain or discomfort.

[HAND SHOW CARD G TO RESPONDENT.] [CODE ALL THAT APPLY.]

1 2 3 4 5 6 7 8

HE54. Is the chest pain usually continuous during these episodes or does it come and go during any one period?

CONTINUOUS	1
COMES AND GOES	2
REFUSED	-7
DON'T KNOW	-8

HE55. Do you usually get the pain after climbing steps?

YES	1	
NO	2	(HE57)
DON'T CLIMB STEPS	3	(HE57)
REFUSED	-7	(HE57)
DON'T KNOW	-8	(HE57)

HE56. How many flights of stairs brings on your chest pain?

_____
FLIGHTS OF STAIRS

HE57. Do you get the chest pain after meals?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HE58. Do you ever get the chest pain while sitting still?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HE59. When you have an episode of chest pain or angina, do you treat it with Nitroglycerine pills under your tongue or a Nitroglycerine inhaler?

YES	1	
NO	2	(HE62)
REFUSED	-7	(HE62)
DON'T KNOW	-8	(HE62)

HE60. Is the duration of chest pain shortened after you have treated it?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

HE61. How many of these types of episodes where you treat yourself do you usually have in a week?

WEEKS	1
MONTHS	2
YEARS	3

_____
EPISODES IN A WEEK/MONTH/YEAR

HE62. Have you had this pain in the past two weeks?

YES	1	
NO	2	(HE64)
REFUSED	-7	(HE64)
DON'T KNOW	-8	(HE64)

HE63. In the past two weeks, has there been an increase in the frequency or severity of the chest pain, a decrease in the frequency or severity, or no change?

INCREASE	1
DECREASE	2
NO CHANGE	3
REFUSED	-7
DON'T KNOW	-8

HE64. Have you ever had a severe pain across the front of your chest lasting for half an hour or more?

YES	1	
NO	2	(HE67)
REFUSED	-7	(HE67)
DON'T KNOW	-8	(HE67)

HE65. Did you see a doctor because of this pain?

YES	1	
NO	2	(HE67)
REFUSED	-7	(HE67)
DON'T KNOW	-8	(HE67)

HE66. What did your doctor say it was?

ANGINA	1
HEART ATTACK	2
REFUSED	-7
DON'T KNOW	-8
OTHER (SPECIFY)	91

_____

HE67. Do you get short of breath at night if you sleep flat or on only one pillow?

YES	1	
NO	2	(HE69)
ON OXYGEN	3	(DAINTRO)
REFUSED	-7	(HE69)
DON'T KNOW	-8	(HE69)

HE68. How many pillows do you need to sleep on to not be short of breath?

NUMBER OF PILLOWS _____

NUMBER OF PILLOWS	1
SHORT OF BREATH EVEN UPRIGHT	2
REFUSED	-7
DON'T KNOW	-8

HE69. Do you wake up at night gasping for breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF HE67 AND HE69 = 2, -7 OR -8, THEN GO TO DAINTROA. IF HE67 OR HE69 = 1, THEN GO TO HE70.)

HE70. About how often did you have shortness of breath at night in the last month? Would you say . . .

several times a night,	1
once every night,	2
a few times a week,	3
once a week, or	4
less often than once a week?	5
REFUSED	-7
DON'T KNOW	-8

SECTION DA: DAILY ACTIVITIES

DAINTROA. Now I have a few questions on how you spend your time.

DA1. During a typical week, do you leave your neighborhood?

YES	1	
NO	2	(DA3)
REFUSED	-7	(DA3)
DON'T KNOW	-8	(DA3)

DA2. Using this card, tell me how many times in a typical week that you leave your neighborhood?

[HAND SHOW CARD H TO RESPONDENT.]

DA3. During a typical week, weather permitting, do you go outside the house, but stay in your neighborhood?

YES	1	
NO	2	(DA5)
REFUSED	-7	(DA5)
DON'T KNOW	-8	(DA5)

DA4. How many times in a typical week do you go outside but stay in your neighborhood?

[HAND SHOW CARD H TO RESPONDENT.]

DA5. Using this card, tell me, in a typical week, about how many times do you talk on the telephone with friends, neighbors or relatives?

[HAND SHOW CARD H TO RESPONDENT.]

DA6. How often do you get together with friends, neighbors or relatives?

[HAND SHOW CARD H TO RESPONDENT.]

DA7. Is there any one special person you know that you feel very close and intimate with -- someone you share confidences and feelings with, someone you feel you can depend on?

YES	1	
NO	2	(DA9)
REFUSED	-7	(DA9)
DON'T KNOW	-8	(DA9)

DA8. Who is this person? [ENTER ONLY ONE PERSON.]

DA9. Could you have used more emotional support than you received in the last year?

YES	1	
NO	2	(DAINTROB)
REFUSED	-7	(DAINTROB)
DON'T KNOW	-8	(DAINTROB)

DA10. Would you say you needed . . .

a lot more,	1
some more, or	2
a little more emotional support?	3
REFUSED	-7
DON'T KNOW	-8

DAINTROB. Now I'm going to ask about some movements and activities which some people have difficulty doing for health or physical reasons.

(SKIP: IF S12 (MVNT.SCRDFGRP) = 2, -7 OR -8, GO TO DA13. OTHERWISE, GO TO DA11.)

DA11. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (use/using) your fingers to grasp or handle, such as buttoning a shirt or picking something up.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA11 (MVNT.BASDFGRP) = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL, THEN GO TO DA11aa. IF 2 SET DA11 (MVNT.BASDFGRP) = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA13.)

DA11aa. How long ago did you first start having difficulty using your fingers to grasp or handle?

MONTHS	1
YEARS	2

(SKIP: IF DA11aa = -7 OR -8, THEN GO TO DA11a. OTHERWISE, GO TO DA12.)

DA11a. Using this card, how long ago did you first start having difficulty (using your fingers to grasp or handle)? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

DA12. What is the main condition that (causes you to have difficulty/prevents you from) using your fingers to grasp or handle?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA13. By yourself, that is, without help from another person or special equipment, do you have any difficulty turning a key in a lock?

YES	1	(DA14)
NO	2	(BOX DA3)
DON'T DO (UNABLE)	3	(DA14a)
REFUSED	-7	(BOX DA3)
DON'T KNOW	-8	(BOX DA3)

DA14. How much difficulty do you have turning a key in a lock? Would you say . . .

[HAND SHOW CARD BLUE TO RESPONDENT.]

DA14a. How long ago did you first start having difficulty turning a key in a lock?

MONTHS	1
YEARS	2

(SKIP: IF DA14a = -7 OR -8, THEN GO TO DA15. OTHERWISE, GO TO DA16.)

DA15. Using this card, how long ago did you first start having difficulty (turning a key in a lock)? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

DA16. What is the main condition that (causes you to have difficulty/prevents you from) turning a key in a lock?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

(BOX DA3. IF S11 (MVNT.SCRDFRSE) = 2, -7 OR -8, GO TO DA19. OTHERWISE, GO TO DA17.)

DA17. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (raise/raising) your arms up over your head.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA17 (MVNT.BASDFRSE) = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. SET VARIABLES DALY.DALYNUM AND DALYTYPE, THEN GO TO DA17aa. IF 2 SET DA17 (MVNT.BASDFRSE) = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA19.)

DA17aa. How long ago did you first start having difficulty raising your arms up over your head?

MONTHS	1
YEARS	2

(SKIP: IF DA17aa = -7 OR -8, THEN GO TO DA17a. OTHERWISE, GO TO DA18.)

DA17a. Using this card, how long ago did you first start having difficulty (raising your arms up over your head)? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

DA18. What is the main condition that (causes you to have difficulty/prevents you from) raising your arms up over your head?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA19. By yourself, that is, without help from aoother persoo or special equipmeot, do you have any difficulty stooping, crouchiog, or kneeliog?

YES	1	(DA20)
NO	2	(BOX DA5)
DON'T DO (UNABLE)	3	(DA20a)
REFUSED	-7	(BOX DA5)
DON'T KNOW	-8	(BOX DA5)

DA20. How much difficulty do you have stoopiog, crouchiog, or kneeliog? Would you sey . . .

[HAND SHOW CARD BLUE TO RESPONDENT.]

DA20s. How long ago did you first stsrt having difficulty stoopiog, crouchiog, or kneeling?

MONTHS	1
YEARS	2

(SKIP: IF DA20a = -7 OR -8, THEN GO TO DA21. OTHERWISE, GO TO DA22.)

DA21. Usiog this card, how loog sgo did you first start heviog difficulty (stoopiog, crouchiog, or kneeliog)? Would you say

[HAND SHOW CARD PINK TO RESPONDENT.]

DA22. What is the maio coodition thst (causes you to have difficulty/preveots you from) stoopiog, crouchiog, or kneeliog?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

(BOX DA5. IF S-13 (MVNT.SCRDFLFT) = 2, -7 OR -8, GO TO DA24. OTHERWISE, GO TO DA23.)

DA23. Esrlier you meotiooed that, hy yourself, you (have difficulty/are unable to) (lift or csrry/liftiog or csrryiog) something as heavy as 10 lhs., for example, a hag of groceries.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA23 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. SET VARIABLES DALY.DALYNUM AND DALYTYPE. IF 2 SET DA23 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA24. IF BASDFLVL = 4 GO TO DA24e OTHERWISE, GO TO DA24.)

DA24. Do you lift or csrry something es heevy es 10 lhs. less ofteo thao you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DA23 = 1, GO TO DA24a. IF DA23 = 2 OR -1 AND DA24 = 2, -7 OR -8, THEN GO TO DA27. IF DA23 = 2 OR -1 AND DA24 = 1, THEN GO TO DA26.)

DA24a. How loog sgo did you first stsrt having difficulty liftiog or csrryiog somethiog as heevy as 10 lhs.?

MONTHS	1
YEARS	2

(SKIP: IF DA24s = -7 OR -8, THEN GO TO DA25. OTHERWISE, GO TO DA26.)

DA25. Usiog this card, how loog ego did you first start heving difficulty (liftiog or csrrying something es heevy es 10 lhs.)? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

DA26. What is the main condition thet (causes you to have difficulty/preveots you from) liftiog or csrryiog something es heevy es 10 lhs.?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA27. By yourself, that is, without help from eoother persoo or special equipmeot, do you have aoy difficulty welkiog across a small room?

YES	1	(DA28)
NO	2	(DA28)
DON'T DO (UNABLE)	3	(DA29e)
REFUSED	-7	(DA28)
DON'T KNOW	-8	(DA28)

DA28. Do you wslk scross small rooms less ofteo than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DA27 = 1, GO TO DA29. IF DA27 = 2, -7 OR -8 AND DA28 = 2, -7 OR -8, THEN GO TO BOX DA9. IF DA27 = 2, -7 OR -8 AND DA28 = 1, THEN GO TO DA31.)

DA29. How much difficulty do you have wslkiog across e small room? Would you sey . . .

[HAND SHOW CARD BLUE TO RESPONDENT.]

DA29s. How long ago did you first stsrt haviog difficulty wslkiog across s small room?

MONTHS	1
YEARS	2

(SKIP: IF DA29s = -7 OR -8, THEN GO TO DA30. OTHERWISE, GO TO DA31.)

DA30. Using this card, how long ago did you first start having difficulty (walkiog across a small room)? Would you sey . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

DA31. What is the main condition that (causes you to have difficulty/prevents you from) walking across a small room?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

(BOX DA9. IF DA27 (MVNT.DIFWLKRM) = 3 OR DA27 = 1 AND DA29 (DALY.BASDFLVL) = 4, GO TO BOX DA12. IF S-14 (MVNT.SCRDFWLK) = 2, -7 OR -8, GO TO DA33. OTHERWISE, GO TO DA32.)

DA32. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (walk/walking) for a quarter of a mile, that is, about 2 or 3 blocks.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA32 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA32 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA33. IF BASDFLVL = 4, GO TO DA34a. OTHERWISE, GO TO DA33.)

DA33. Do you walk a quarter mile (that is, about 2 or 3 blocks) less often than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DA32 = 1, GO TO DA34a. IF DA32 = 2 OR -1 AND DA33 = 2, -7 OR -8, THEN GO TO DA36. IF DA32 = 2 OR -1 AND DA=33 = 1, THEN GO TO DA35.)

DA34a. How long ago did you first start having difficulty walking for a quarter mile, that is, about 2 or 3 blocks?

MONTHS	1
YEARS	2

(SKIP: IF DA34a = -7 OR -8, THEN GO TO DA34. OTHERWISE, GO TO DA35.)

DA34. Using this card, how long ago did you first start having difficulty (walking for a quarter mile, that is, about 2 or 3 blocks)? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

DA35. What is the main condition that (causes you to have difficulty/prevents you from) walking for a quarter of a mile (that is, about 2 or 3 blocks)?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

(BOX DA12. IF S-15 (MVNT.SCRDFSTP) = 2, -7 OR -8, GO TO DA37. OTHERWISE, GO TO DA36.)

DA36. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (walk/walking) up 10 steps without resting.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA36 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA36 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA37. IF BASDFLVL = 4, GO TO DA39a. OTHERWISE, GO TO DA37.)

DA37. Do you walk up 10 steps without resting less often than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DA38. Do you walk up 10 steps without resting differently than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DA36 = 1, GO TO DA39a. IF DA36 = 2 OR -1 AND DA37 AND DA38 = 2, -7 OR -8, THEN GO TO DA41a. IF DA36 = 2 OR -1 AND DA37 OR DA38 = 1, THEN GO TO DA40.)

DA39a. How long ago did you first start having difficulty walking up 10 steps without resting?

MONTHS	1
YEARS	2

(SKIP: IF DA39a = -7 OR -8, THEN GO TO DA39. OTHERWISE, GO TO DA40.)

DA39. Using this card, how long ago did you first start having difficulty (walking up 10 steps without resting)? Would you say .
[HAND SHOW CARD PINK TO RESPONDENT.]

DA40. What is the main condition that (causes you to have difficulty/prevents you from) walking up 10 steps without resting?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA41a. When you walk, do you use a cane?

YES	1	
NO	2	(DA42a)
CANNOT WALK	3	(DA46a)
REFUSED	-7	(DA42a)
DON'T KNOW	-8	(DA42a)

DA41b. Do you use a cane . . .

Always,	1
Very often,	2
Often, or	3
Sometimes?	4
REFUSED	-7
DON'T KNOW	-8

DA41c. Do you uae a cane at home?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA41d. Do you use a cane outside your home?

YES	1	
NO	2	
DON'T GO OUTSIDE HOME	3	
REFUSED	-7	
DON'T KNOW	-8	

DA42a. When you walk, do you use a walker?

YES	1	
NO	2	(DA43a)
REFUSED	-7	(DA43a)
DON'T KNOW	-8	(DA43a)

DA42b. Do you use a walker . . .

Alwaya,	1	
Very often,	2	
Often, or	3	
Sometimea?	4	
REFUSED	-7	
DON'T KNOW	-8	

DA42c. Do you use a walker at home?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA42d. Do you use a walker outside your home?

YES	1	
NO	2	
DON'T GO OUTSIDE HOME	3	
REFUSED	-7	
DON'T KNOW	-8	

DA43a. When you shop, do you lean on an object such as a shopping cart?

YES	1	
NO	2	(DA44a)
DON'T SHOP	3	(DA44a)
REFUSED	-7	(DA44a)
DON'T KNOW	-8	(DA44a)

DA43b. Do you lean on an object such as a shopping cart . . .

Alwaya,	1	
Very often,	2	
Often, or	3	
Sometimes?	4	
REFUSED	-7	
DON'T KNOW	-8	

DA44a. When you walk, do you reach out for or hold onto the furniture or walls?

YES	1	
NO	2	(DA45a)
REFUSED	-7	(DA45a)
DON'T KNOW	-8	(DA45a)

DA44b. Do you reach out for or hold onto the furniture or walls . . .

Alwaya,	1	
Very often,	2	
Often, or	3	
Sometimea?	4	
REFUSED	-7	
DON'T KNOW	-8	

DA44c. Do you reach out for or hold onto the furniture or walls at home?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA44d. Do you reach out for or hold onto the furniture or walls outaide your home?

YES	1	
NO	2	
DON'T GO OUTSIDE HOME	3	
REFUSED	-7	
DON'T KNOW	-8	

DA45a. When you walk, do you hold onto another person?

YES	1	
NO	2	(DA46a)
REFUSED	-7	(DA46a)
DON'T KNOW	-8	(DA46a)

DA45b. Do you hold onto another person . . .

Always,	1	
Very often,	2	
Often, or	3	
Sometimes?	4	
REFUSED	-7	
DON'T KNOW	-8	

DA45c. Do you hold onto another person at home?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA45d. Do you hold onto another person outside your home?

YES	1	
NO	2	
DON'T GO OUTSIDE HOME	3	
REFUSED	-7	
DON'T KNOW	-8	

DA46a. Do you use a wheelchair?

YES	1	
NO	2	(BOX DA15)
REFUSED	-7	(BOX DA15)
DON'T KNOW	-8	(BOX DA15)

DA46b. Do you use a wheelchair . . .

Always,	1	
Very often,	2	
Often, or	3	
Sometimes?	4	
REFUSED	-7	
DON'T KNOW	-8	

DA46c. Do you use a wheelchair at home?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA46d. Do you use a wheelchair outside your home?

YES	1	
NO	2	
DON'T GO OUTSIDE HOME	3	
REFUSED	-7	
DON'T KNOW	-8	

(BOX DA15. IF DA27 = 3, OR DA27 =1 AND DA29 = 4, OR DA41a = 3, THEN GO TO BOX DA16. OTHERWISE, GO TO DA47.)

DA47. When you walk in the dark, do you reach out for or hold onto the furniture or walls?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA47a. When you walk in the dark, do you hold onto another person?

YES	1	(DA48)
NO	2	(BOX DA16)
REFUSED	-7	(BOX DA16)
DON'T KNOW	-8	(BOX DA16)

DA48. Who helps you? [ENTER UP TO THREE HELPERS.]

(BOX DA16. IF S17 (MVNT.SCRDFBTH) = 2, -7 OR -8 GO TO DA50. OTHERWISE, GO TO DA49.)

DA49. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (bathe or shower/bathing or showering).

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA49 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA49 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA50. IF BASDFLVL = 4 GO TO DA52a. OTHERWISE, GO TO DA50.)

DA50. Do you bathe or shower less often than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DA51. Do you bathe or shower differently than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DA49 = 1, GO TO DA52a. IF DA49 = 2 OR -1 AND DA50 AND DA51 = 2, -7 OR -8, THEN GO TO DA54. IF DA49 = 2 OR -1 AND DA50 OR DA51 = 1, THEN GO TO DA53.)

DA52a. How long ago did you first start having difficulty bathing or showering?

MONTHS	1
YEARS	2

(SKIP: IF DA52a = -7 OR -8, THEN GO TO DA52. OTHERWISE, GO TO DA53.)

DA52. Using this card, how long ago did you first start having difficulty (bathing or showering)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

DA53. What is the main condition that (causes you to have difficulty/prevents you from) bathing or showering?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA54. Do you use special equipment to bathe or shower such as a shower seat, tub stool or grab bars?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DA55. Do you usually receive help from another person in bathing or showering?

YES	1	(DA56)
NO	2	(BOX DA19)
REFUSED	-7	(BOX DA19)
DON'T KNOW	-8	(BOX DA19)

DA56. Who helps you? [ENTER UP TO THREE HELPERS.]

(BOX DA19. IF S18 (MVNT.SCRDFDRS) = 2, -7 OR -8 GO TO DA58. OTHERWISE, GO TO DA57.)

DA57. Earlier, you mentioned that, by yourself, you (have difficulty/are unable to) (dress/dressing).

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA57 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA57 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA58. IF BASDFLVL = 4 GO TO DA60a. OTHERWISE, GO TO DA58.)

DA58. Do you dress less often than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DA59. Do you dress differently than you used to?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DA57 = 1, GO TO DA60a. IF DA57 = 2 OR -1 AND DA58 AND DA59 = 2, -7 OR -8, THEN GO TO DA62. IF DA57 = 2 OR -1 AND DA58 OR DA59 = 1, THEN GO TO DA61.)

DA60a. How long ago did you first start having difficulty dressing?

MONTHS	1
YEARS	2

(SKIP: IF DA60a = -7 OR -8, THEN GO TO DA60. OTHERWISE, GO TO DA61.)

DA60. Using this card, how long ago did you first start having difficulty (dressing)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

DA61. What is the main condition that (causes you to have difficulty/prevents you from) dressing?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA62. Do you use special equipment to dress such as devices to help with zippers or buttons?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DA63. Do you usually receive help from another person in dressing?

YES	1	(DA64)
NO	2	(BOX DA22)
REFUSED	-7	(BOX DA22)
DON'T KNOW	-8	(BOX DA22)

DA64. Who helps you? [ENTER UP TO THREE HELPERS.]

(BOX DA22. IF S16 (MVNT.SCRDFCHR) = 2, -7 OR -8 GO TO DA67. OTHERWISE, GO TO DA65.)

DA65. Earlier, you mentioned that, by yourself, you (have difficulty/are unable to) (get/getting) in and out of bed or chairs.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA65 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA65 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA67. IF BASDFLVL = 4 GO TO DA69a. OTHERWISE, GO TO DA67.)

DA67. Do you get in and out of bed or chairs less often than you used to?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA68. Do you get in and out of hed or chairs differently than you used to?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF DA65 = 1, GO TO DA69a. IF DA65 = 2 OR -1 AND DA67 AND DA68 = 2, -7 OR -8, THEN GO TO DA71. IF DA65 = 2 OR -1 AND DA67 OR DA68 = 1, THEN GO TO DA70.)

DA69a. How long ago did you first start having difficulty getting in and out of bed or chairs?

MONTHS	1
YEARS	2

(SKIP: IF DA69a = -7 OR -8, THEN GO TO DA69. OTHERWISE, GO TO DA70.)

DA69. Using this card, how long ago did you first start having difficulty (getting in and out of hed or chairs)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

DA70. What is the main condition that (causes you to have difficulty/prevents you from) getting in and out of bed or chairs?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA71. Do you use special equipment to get in and out of bed or chairs such as a cane, walker, or special chair?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA72. Do you usually receive help from another person in getting in and out of hed or chairs?

YES	1	(DA73)
NO	2	(BOX DA25)
REFUSED	-7	(BOX DA25)
DON'T KNOW	-8	(BOX DA25)

DA73. Who helps you? [ENTER UP TO THREE HELPERS.]

(BOX DA25. IF S19 (MVNT.SCRDFEAT) = 2, -7 OR -8 GO TO DA77. OTHERWISE, GO TO DA74.)

DA74. Earlier, you mentioned that, by yourself, you (have difficulty/are unable to) (eat/eating), for example, holding a fork, cutting up your food, or drinking from a glass.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA74 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA74 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA77. OTHERWISE, GO TO DA74a.)

DA74a. How long ago did you first start having difficulty eating, for example, holding a fork, cutting up your food, or drinking from a glass?

MONTHS	1
YEARS	2

(SKIP: IF DA74a = -7 OR -8, THEN GO TO DA75. OTHERWISE, GO TO DA76.)

DA75. Using this card, how long ago did you first start having difficulty (eating, for example, holding a fork, cutting up your food, or drinking from a glass)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

DA76. What is the main condition that (causes you to have difficulty/prevents you from) eating (for example, holding a fork, cutting up your food, or drinking from a glass)?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA77. Do you use special equipment to eat such as special eating utensils?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

DA78. Do you usually receive help from another person in eating?

YES	1	(DA79)
NO	2	(BOX DA27)
REFUSED	-7	(BOX DA27)
DON'T KNOW	-8	(BOX DA27)

DA79. Who helps you? [ENTER UP TO THREE HELPERS.]

(BOX DA27. IF S20 (MVNT.SCRDFTOL) = 2, -7 OR -8 GO TO DA83. OTHERWISE, GO TO DA80.)

DA80. Earlier, you mentioned that, by yourself, you (have difficulty/are unable to) (use/using) the toilet including getting to the toilet.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET DA80 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET DA80 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO DA83. OTHERWISE, GO TO DA80a.)

DA80a. How long ago did you first start having difficulty using the toilet, including getting to the toilet?

MONTHS	1
YEARS	2

(SKIP: IF DA80a = -7 OR -8, THEN GO TO DA81. OTHERWISE, GO TO DA82.)

DA81. Using this card, how long ago did you first start having difficulty (using the toilet including getting to the toilet)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

DA82. What is the main condition that (causes you to have difficulty/prevents you from) using the toilet including getting to the toilet?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

DA83. Do you use special equipment to use the toilet such as a raised toilet, bedside commode or grab bar?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DA84. Do you usually receive help from another person in using the toilet including getting to the toilet?

YES	1	(DA85)
NO	2	(BOX DA29)
REFUSED	-7	(BOX DA29)
DON'T KNOW	-8	(BOX DA29)

DA85. Who helps you? [ENTER UP TO THREE HELPERS.]

(BOX DA29. SKIP: IF ANY VARIABLE DALY.HELPER = 1 THEN GO TO DA86. OTHERWISE, GO TO EXINTRO.)

DA86. In the last year, who have you relied on the most for help with the activities I've mentioned?

[ENTER ONLY ONE HELPER.]

SECTION EX: EXERCISE TOLERANCE

EXINTRO. Next, please tell me whether or not you can do the following activities, with or without symptoms.

(SKIP: IF DA27 = 3, OR IF DA27 = 1 AND DA29 = 4, OR IF DA41a = 3, THEN GO TO EX65. OTHERWISE, GO TO EX1.)

EX1. Can you walk down a flight of stairs without stopping, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX33)
REFUSED	-7	
DON'T KNOW	-8	

EX2. When you (try to) walk down a flight of stairs without stopping, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX3. When you (try to) walk down a flight of stairs without stopping, do you get short of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX4. When you (try to) walk down a flight of stairs without stopping, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX4a. When you (try to) walk down a flight of stairs without stopping, do you get excessively fatigued?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) AND EX3 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1), THEN GO TO EX33. IF EX1 (EXER.WLKSTRS) = 2, -7 OR -8, GO TO EX33.)

EX5. Can you carry a light parcel up a flight of stairs, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX9)
REFUSED	-7	
DON'T KNOW	-8	

EX6. When you (try to) carry a light parcel up a flight of stairs, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX7. When you (try to) carry a light parcel up a flight of stairs, do you get short of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX8. When you (try to) carry a light parcel up a flight of stairs, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX8a. When you (try to) carry a light parcel up a flight of stairs, do you get excessively fatigued?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX5 = 1, GO TO EX21. IF EX5 = 2, -7 OR -8, GO TO EX9.)

EX9. Can you garden, rake or weed, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX13)
REFUSED	-7	
DON'T KNOW	-8	

EX10. When you (try to) garden, rake or weed, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX11. When you (try to) garden, rake or weed, do you get short of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX12. When you (try to) garden, rake or weed, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX12a. When you (try to) garden, rake or weed, do you get excessively fatigued?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX9 = 1, GO TO EX21. IF EX9 = 2, -7 OR -8, GO TO EX13.)

EX13. Can you dance a fox trot, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX17)
REFUSED	-7	
DON'T KNOW	-8	

EX14. When you (try to) dance a fox trot, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX15. When you (try to) dance a fox trot, do you get short of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX16. When you (try to) dance a fox trot, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX16a. When you (try to) dance a fox trot, do you get excessively fatigued?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX13 = 1, GO TO EX21. IF EX13 = 2, -7 OR -8, GO TO EX17.)

EX17. Cao you walk at a brisk pace, say four miles per hour, oo level ground without stopping, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(LSINTRO)
REFUSED	-7	
DON'T KNOW	-8	

EX18. When you (try to) walk at a brisk pace, say four miles par hour, oo level ground without stoppiog, do you get chest paio?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX19. Wheo you (try to) walk at a brisk pace, say four miles per hour, oo level ground without stoppiog, do you get short of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX20. Wheo you (try to) walk at a brisk pace, say four miles par hour, oo laval ground without stopping, do you get hip or knaa paio?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX20a. Whao you (try to) walk at a brisk pace, say four miles par hour, oo lavel ground without stoppiog, do you gat excessivaly fatigued?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) AND EX3 (TOLE.SOBACT) = 2, -7 OR -8), AND: IF EX17 = 1, THEN GO TO EX21. OTHERWISE, GO TO LSINTRO.)

EX21. Cao you carry at laast 24 pounds up 8 staps, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX25)
REFUSED	-7	
DON'T KNOW	-8	

EX22. When you (try to) carry at least 24 pounds up 8 staps, do you get chast pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX23. Wheo you (try to) carry at laast 24 pounds up 8 staps, do you gat shortoass of braath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX24. When you (try to) carry at least 24 pounds up 8 staps, do you get hip or knaa paio?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX24a. Wheo you (try to) carry at least 24 pounds up 8 steps, do you get excessively tired?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX21 = 1, GO TO LSINTRO. IF EX21 = 2, -7 OR -8, GO TO EX25.)

EX25. Can you do outdoor work such as shovel soow or spada soil, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX29)
REFUSED	-7	
DON'T KNOW	-8	

EX26. When you (try to) do outdoor work such as shovel snow or spade soil, do you get chest paio?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX27. When you (try to) do outdoor work such as shovel snow or spade soil, do you get shortness of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX28. When you (try to) do outdoor work such as shovel snow or spade soil, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX28a. When you (try to) do outdoor work sucb as shovel snow or spade soil, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX25 = 1, GO TO LSINTRO. IF EX25 = 2, -7 OR -8, GO TO EX29.)

EX29. Can you do a slow jog or very brisk walk at 5 miles per bour, witb or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(LSINTRO)
REFUSED	-7	
DON'T KNOW	-8	

EX30. When you (try to) do a slow jog or very brisk walk at 5 miles per hour, do you get chest pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX31. When you (try to) do a slow jog or very brisk walk at 5 miles per bour, do you get sbortness of breath?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX32. When you (try to) do a slow jog or very brisk walk at 5 miles per bour, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX32a. When you (try to) do a slow jog or very brisk walk at 5 miles per hour, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX29 = 1, 2, -7 OR -8 GO TO LSINTRO.)

EX33. Can you strip and make a bed, witb or witbout symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX37)
REFUSED	-7	
DON'T KNOW	-8	

EX34. When you (try to) strip or make a bed, do you get chest pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX35. When you (try to) strip or make a bed, do you get shortness of breath?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX36. When you (try to) strip or make a bed, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX36a. When you (try to) strip or make a bed, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX33 (EXER.MAKEBED) = 1, 2, -7 OR -8, AND (EX34 (TOLE.CPACT) OR EX35 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX33 (EXER.MAKEBED) = 1, 2, -7 OR -8, AND (EX34 (TOLE.CPACT) AND EX35 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX33 (EXER.MAKEBED) = 1 AND (EX34 (TOLE.CPACT) OR EX35 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX33 (EXER.MAKEBED) = 1 AND (EX34 (TOLE.CPACT) AND EX35 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX33 (EXER.MAKEBED) = 2, -7 OR -8, THEN GO TO EX37.)

EX37. Can you mop floors, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX41)
REFUSED	-7	
DON'T KNOW	-8	

EX38. When you (try to) mop floors, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX39. When you (try to) mop floors, do you get shortness of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX40. When you (try to) mop floors, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX40a. When you (try to) mop floors, do you get excessively tired?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX37 (EXER.MOPFLOOR) = 1, 2, -7 OR -8, AND (EX38 (TOLE.CPACT) OR EX39 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX33 (EXER.MOPFLOOR) = 1, 2, -7 OR -8, AND (EX38 (TOLE.CPACT) AND EX39 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX37 (EXER.MOPFLOOR) = 1 AND (EX38 (TOLE.CPACT) OR EX39 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX37 (EXER.MOPFLOOR) = 1 AND (EX38 (TOLE.CPACT) AND EX39 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX37 (EXER.MOPFLOOR) = 2, -7 OR -8, THEN GO TO EX41.)

EX41. Can you hand wash clothes, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX45)
REFUSED	-7	
DON'T KNOW	-8	

EX42. When you (try to) hand wash clothes, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX43. When you (try to) hand wash clothes, do you get shortness of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX44. When you (try to) hand wash clothes, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX44a. When you (try to) hand wash clothes, do you get excessively tired?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX41 (EXER.HNDWSHCH) = 1, 2, -7 OR -8, AND (EX42 (TOLE.CPACT) OR EX43 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX41 (EXER.HNDWSHCH) = 1, 2, -7 OR -8, AND (EX42 (TOLE.CPACT) AND EX43 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX41 (EXER.HNDWSHCH) = 1 AND (EX42 (TOLE.CPACT) OR EX43 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX41 (EXER.HNDWSHCH) = 1 AND (EX42 (TOLE.CPACT) AND EX43 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX41 (EXER.HNDWSHCH) = 2, -7 OR -8, THEN GO TO EX45.)

EX45. Can you walk 2.5 miles per hour, that is, a normal pace for a middle-aged woman, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX49)
REFUSED	-7	
DON'T KNOW	-8	

EX46. When you (try to) walk 2.5 miles per hour, that is, a normal pace for a middle-aged woman, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX47. When you (try to) walk 2.5 miles per hour, that is, a normal pace for a middle-aged woman, do you get shortness of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX48. When you (try to) walk 2.5 miles per hour, that is, a normal pace for a middle-aged woman, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX48a. When you (try to) walk 2.5 miles per hour, that is, a normal pace for a middle-aged woman, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX45 (EXER.WLK2MPH) = 1, 2, -7 OR -8, AND (EX46 (TOLE.CPACT) OR EX47 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX45 (EXER.WLK2MPH) = 1, 2, -7 OR -8, AND (EX46 (TOLE.CPACT) AND EX47 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX45 (EXER.WLK2MPH) = 1 AND (EX46 (TOLE.CPACT) OR EX47 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX45 (EXER.WLK2MPH) = 1 AND (EX46 (TOLE.CPACT) AND EX47 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX45 (EXER.WLK2MPH) = 2, -7 OR -8, THEN GO TO EX49.)

EX49. Can you bowl, with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX53)
REFUSED	-7	
DON'T KNOW	-8	

EX50. When you (try to) bowl, do you get chest pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX51. When you (try to) bowl, do you get shortness of breath?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX52. When you (try to) bowl, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX52a. When you (try to) bowl, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX49 (EXER.BOWL) = 1, 2, -7 OR -8, AND (EX50 (TOLE.CPACT) OR EX51 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX49 (EXER.BOWL) = 1, 2, -7 OR -8, AND (EX50 (TOLE.CPACT) AND EX51 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX49 (EXER.BOWL) = 1 AND (EX50 (TOLE.CPACT) OR EX51 (TOLE.SOBACT) = 1), THEN GO TO EX53; OR IF EX49 (EXER.BOWL) = 1 AND (EX50 (TOLE.CPACT) AND EX51 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX49 (EXER.BOWL) = 2, -7 OR -8, THEN GO TO EX53.)

EX53. Can you dress without stopping because of symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX57)
REFUSED	-7	
DON'T KNOW	-8	

EX54. When you (try to) dress without stopping, do you get chest pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX55. When you (try to) dress without stopping, do you get shortness of breath?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX56. When you (try to) dress without stopping, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX56a. When you (try to) dress without stopping, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX53 (EXER.DRESSING) = 1, 2, -7 OR -8, AND (EX54 (TOLE.CPACT) OR EX55 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX53 (EXER.DRESSING) = 1, 2, -7 OR -8, AND (EX54 (TOLE.CPACT) AND EX55 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX53 (EXER.DRESSING) = 1 AND (EX54 (TOLE.CPACT) OR EX55 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX53 (EXER.DRESSING) = 1 AND (EX54 (TOLE.CPACT) AND EX55 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX53 (EXER.DRESSING) = 2, -7 OR -8, THEN GO TO EX57.)

EX57. Can you iron with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX61)
REFUSED	-7	
DON'T KNOW	-8	

EX58. When you (try to) iron, do you get chest pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX59. When you (try to) iron, do you get shortness of breath?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX60. When you (try to) iron, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX60a. When you (try to) iron, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX57 (EXER.IRONING) = 1, 2, -7 OR -8, AND (EX58 (TOLE.CPACT) OR EX59 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX57 (EXER.IRONING) = 1, 2, -7 OR -8, AND (EX58 (TOLE.CPACT) AND EX59 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX57 (EXER.IRONING) = 1 AND (EX58 (TOLE.CPACT) OR EX59 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX57 (EXER.IRONING) = 1 AND (EX58 (TOLE.CPACT) AND EX59 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX57 (EXER.IRONING) = 2, -7 OR -8, THEN GO TO EX61.)

EX61. Can you stand for 2 hours with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX65)
REFUSED	-7	
DON'T KNOW	-8	

EX62. When you (try to) stand for 2 hours, do you get chest pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX63. When you (try to) stand for 2 hours, do you get shortness of breath?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX64. When you (try to) stand for 2 hours, do you get hip or knee pain?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

EX64a. When you (try to) stand for 2 hours, do you get excessively tired?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX61 (EXER.STND2HRS) = 1, 2, -7 OR -8, AND (EX62 (TOLE.CPACT) OR EX63 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX61 (EXER.STND2HRS) = 1, 2, -7 OR -8, AND (EX62 (TOLE.CPACT) AND EX63 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX61 (EXER.STND2HRS) = 1 AND (EX62 (TOLE.CPACT) OR EX63 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX61 (EXER.STND2HRS) = 1 AND (EX62 (TOLE.CPACT) AND EX63 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX61 (EXER.STND2HRS) = 2, -7 OR -8, THEN GO TO EX65.)

EX65. Can you participate in a card game or bingo with or without symptoms?

YES	1	
NO	2	
DON'T DO	3	(EX69)
REFUSED	-7	
DON'T KNOW	-8	

EX66. When you (try to) participate in a card game or bingo, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX67. When you (try to) participate in a card game or bingo, do you get shortness of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX68. When you (try to) participate in a card game or bingo, do you get hip or knee pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX68a. When you (try to) participate in a card game or bingo, do you get excessively tired?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX65 (EXER.CARDGAME) = 1, 2, -7 OR -8, AND (EX66 (TOLE.CPACT) OR EX67 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX65 (EXER.CARDGAME) = 1, 2, -7 OR -8, AND (EX66 (TOLE.CPACT) AND EX67 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = 2, -7, -8 OR 3, AND: IF EX65 (EXER.CARDGAME) = 1 AND (EX66 (TOLE.CPACT) OR EX67 (TOLE.SOBACT) = 1), THEN GO TO EX69; OR IF EX65 (EXER.CARDGAME) = 1 AND (EX66 (TOLE.CPACT) AND EX67 (TOLE.SOBACT) = 2, -7 OR -8), THEN GO TO LSINTRO; OR IF EX65 (EXER.CARDGAME) = 2, -7 OR -8, THEN GO TO EX69. IF EX1 (EXER.WLKSTRS) = -1 (INAPPLICABLE) AND EX66 (TOLE.CPACT) OR EX67 (TOLE.SOBACT) = 1, THEN GO TO EX69. OTHERWISE, GO TO LSINTRO.)

EX69. If you sit quietly in a chair, do you get chest pain?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

EX70. If you sit quietly in a chair, do you get shortness of breath?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF EX1 (EXER.WLKSTRS) = 1 AND (EX2 (TOLE.CPACT) OR EX3 (TOLE.SOBACT) = 1) AND: IF EX69 (EXER.CPSITING) OR EX70 (EXER.SOBSITNG) = 1, THEN GO TO EX5; OR IF EX69 (EXER.CPSITING) AND EX70 (EXER.SOBSITNG) = 2 THEN GO TO EX5. IF EX1 (EXER.WLKSTRS) = -1, 2, -7, -8 OR 3, AND: IF EX69 (EXER.CPSITING) OR EX70 (EXER.SOBSITNG) = 1, THEN GO TO LSINTRO; OR IF EX69 (EXER.CPSITING) AND EX70 (EXER.SOBSITNG) = 2 THEN GO TO LSINTRO.)

SECTION LS: PERCEIVED QUALITY OF LIFE

LSINTRO. Now, I want to talk to you about your satisfaction with your health and other fundamental aspects of your life. I want you to think about your own life situation and tell me just how satisfied or dissatisfied you are.

LS-1. Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with your physical health, that is, the health of your body?

[HAND SHOW CARD I TO RESPONDENT.]

LEVEL OF SATISFACTION

LS-2. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) how well you care for yourself, for example, preparing meals, bathing or shopping?

[HAND SHOW CARD I TO RESPONDENT.]

LEVEL OF SATISFACTION

LS-3. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) how well you think and remember?

[HAND SHOW CARD I TO RESPONDENT.]

LEVEL OF SATISFACTION

LS-4. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the amount of walking you do?

[HAND SHOW CARD I TO RESPONDENT.]

LEVEL OF SATISFACTION

LS-5. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) how often you get outside the house, for example, going into town, using public transportation or driving?

[HAND SHOW CARD I TO RESPONDENT.]

LEVEL OF SATISFACTION

LS-6. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) how well you carry on a conversation, for example, speaking clearly, hearing others, or being understood?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-7. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the kind and amount of food you eat?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-8. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) how often you see or talk to your family and friends?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-9. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the help you get from your family and friends, for example, helping in an emergency, fixing your house, or doing errands?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-10. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the help you give to your family and friends?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-11. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) your contribution to your community, for example, a neighborhood, religious, political or other group?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-12. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) your retirement or current job?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-13. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the kind and amount of recreation or leisure you have?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-14. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) your level of sexual activity or lack of sexual activity?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-15. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the way your income meets your needs?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-16. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) how respected you are by others?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-17. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the meaning and purpose of your life?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS-18. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the amount of variety in your life?

[HAND SHOW CARD I TO RESPONDENT.]

_____
LEVEL OF SATISFACTION

LS18a. (Using this card (where 0 is extremely dissatisfied and 10 is very satisfied), how satisfied are you with. . .) the amount and kind of sleep you get?

LEVEL OF SATISFACTION

LS-19. Now, using this scale, please tell me how happy you are?

[HAND SHOW CARD J TO RESPONDENT.]

LEVEL OF HAPPINESS

SECTION PU: PULMONARY

PUINTROA. Next, I have some more questions about your health.

PU1. Do you usually cough on getting up, first thing in the morning?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

PU2. Do you usually cough during the rest of the day or during the night?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

SKIP: IF PU1 AND PU2 = 2, -7 OR -8, GO TO PU5. IF PU1 OR PU2 =1, CONTINUE.

PU3. Have you had this cough for...

Less than 1 month,	1	(PU5)
1-6 months,	2	(PU5)
7-12 months, or	3	(PU5)
More than 1 year?	4	(PU4)
REFUSED	-7	(PU5)
DON'T KNOW	-8	(PU5)

PU4. For how many years have you had this cough?

YEARS HAD COUGH

PU5. Do you usually bring up phlegm on getting up, first thing in the morning?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU6. Do you usually bring up phlegm during the rest of the day or during the night?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SKIP: IF PU5 AND PU6 = 2, -7 OR -8, GO TO PU9. IF PU5 OR PU6 = 1, CONTINUE.

PU7. Have you had this trouble with phlegm for ...

Less than 1 month,	1	(PU9)
1-6 months,	2	(PU9)
7-12 months, or	3	(PU9)
More than 1 year?	4	(PU8)
REFUSED	-7	(PU9)
DON'T KNOW	-8	(PU9)

PU8. How many years have you had this trouble with phlegm?

YEARS WITH PHLEGM

PU9. Does your chest ever sound wheezy or whistling when you have a cold?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU10. Does your chest ever sound wheezy or whistling apart from when you have a cold?

YES	1	
NO	2	(PU14)
REFUSED	-7	(PU14)
DON'T KNOW	-8	(PU14)

PU11. Does your chest sound wheezy or whistling most days or nights?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU12. Have you had this whistling sound for ...

Less than 1 month,	1	(PU14)
1-6 months,	2	(PU14)
7-12 months, or	3	(PU14)
More than 1 year?	4	(PU13)
REFUSED	-7	(PU14)
DON'T KNOW	-8	(PU14)

PU13. For how many years has this wheezy or whistling sound been present?

_____
YEARS

PU14. Have you ever had an attack of wheezing that has made you feel short of breath?

YES	1	
NO	2	(PU19)
REFUSED	-7	(PU19)
DON'T KNOW	-8	(PU19)

PU15. How old were you when you had your first such attack?

_____
YEARS OLD

PU16. Have you had two or more such episodes?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU17. Have you ever required medicine or treatment for the(se) attack(s)?

YES	1	
NO	2	(PU19)
REFUSED	-7	(PU19)
DON'T KNOW	-8	(PU19)

PU18. When was your most recent attack of wheezing that required medicine or treatment?

_____/_____/_____
MONTH DAY YEAR

PU19. Has a doctor ever told you that you had chronic bronchitis?

YES	1	
NO	2	(PU22)
REFUSED	-7	(PU22)
DON'T KNOW	-8	(PU22)

PU20. Do you still have it?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU21. How old were you when it started?

_____
YEARS OLD

PU22. Has a doctor ever told you that you had emphysema?

YES	1	
NO	2	(PU24)
REFUSED	-7	(PU24)
DON'T KNOW	-8	(PU24)

PU23. How old were you when it started?

_____
YEARS OLD

PU24. Has a doctor ever told you that you had asthma?

YES	1	
NO	2	(PU28)
REFUSED	-7	(PU28)
DON'T KNOW	-8	(PU28)

PU25. How old were you when it started?

_____
YEARS OLD

PU26. Do you still have it?

YES	1	(PU28)
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

PU27. How old were you when it stopped?

_____
YEARS OLD

PU28. Have you been treated for pneumonia in the last 5 years?

YES	1	
NO	2	(PU31)
REFUSED	-7	(PU31)
DON'T KNOW	-8	(PU31)

PU29. How long ago did you last have pneumonia?

MONTHS	1
YEARS	2

PU30. Did you require a stay in the hospital for treatment?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU31. Have you ever had swelling of your feet or ankles?

YES	1	
NO	2	(PU33)
NO FEET	3	(PU33)
REFUSED	-7	(PU33)
DON'T KNOW	-8	(PU33)

PU31a. Have you had this swelling in only one foot or ankle or was it in both feet or ankles?

ONE FOOT/ANKLE	1
BOTH FEET/ANKLES	2
REFUSED	-7
DON'T KNOW	-8

PU32. Did the swelling tend to come on during the day and go down at night or not?

TENDED TO COME ON DURING DAY AND GO DOWN AT NIGHT	1
DID NOT TEND TO COME ON DURING DAY AND GO DOWN AT NIGHT	2
OTHER (SPECIFY)	91
REFUSED	-7
DON'T KNOW	-8

PU33. Do you get pain in either leg when you walk?

YES	1	
NO	2	(PU43)
DOESN'T WALK	3	(PU43)
REFUSED	-7	(PU43)
DON'T KNOW	-8	(PU43)

PU34. Does this pain ever begin when you are standing still or sitting?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU35. Do you get this pain in your calf or calves?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU36. Do you get this pain when you walk up hill or hurry?

YES	1
NO	2
NEVER HURRY OR WALK UP HILL	3
REFUSED	-7
DON'T KNOW	-8

PU37. Do you get this pain when you walk at an ordinary pace?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU38. Does this pain ever disappear while you are walking?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

PU39. What do you do if you get this pain in your legs while you are walking?

STOP OR SLOW DOWN	1
CONTINUE AT SAME PACE	2
OTHER (SPECIFY)	91
REFUSED	-7
DON'T KNOW	-8

PU40. If you staod atill is tha paio raliavad?

YES	1	
NO	2	(PU42)
REFUSED	-7	(PU42)
DON'T KNOW	-8	(PU42)

PU41. How aooo is it ralieved?

10 MINUTES OR LESS	1
MORE THAN 10 MINUTES	2
REFUSED	-7
DON'T KNOW	-8

PU42. How many hlocks cao you welk hefore you get this paio io your legs? [ENTER '0' IF LESS THAN ONE BLOCK.]

_____
BLOCKS

PU43. Io the paat month, oo tha avarage, have you haeo faeliog unusually tired duriog the day?

YES	1	
NO	2	(PU45)
REFUSED	-7	(PU45)
DON'T KNOW	-8	(PU45)

PU44. Have you beao faaliog unusually tired...

All of the time	1
Most of tha tima, or	2
Some of tha time?	3
REFUSED	-7
DON'T KNOW	-8

PU45. Io tha past mooth, have you felt unusually weak?

YES	1	
NO	2	(PU47)
REFUSED	-7	(PU47)
DON'T KNOW	-8	(PU47)

PU46. Hava you haen feeling unusuelly weak...

All of the time,	1
Most of the time, or	2
Some of the time?	3
REFUSED	-7
DON'T KNOW	-8

PU47. Using this card, would you pleese rata your usual energy lavel on e scela from 0 to 10 whara 0 is no energy aod 10 is the most anergy that you heve ever had. Pleese give ma e oumber hetweao 0 eod 10 that descrihes your usuel eoergy level, while awake, io tha last month.

[HAND SHOW CARD K TO RESPONDENT.]

_____
ENERGY LEVEL

SKIP: IF DA27 (MVNT.DIFWLKRM) = 1 AND DA29 (DALY.BASDFLVL) =4, OR DA27 (MVNT.DIFWLKRM) = 3 OR DA41a (MVNT.USECANE) = 3, THEN GO TO PU57. OTHERWISE, GO TO PU48e.

PUINTROB. Next I am goiog to reed e list of ectivities to find out if you have done them io the past two weeks.

PU48a. Duriog the pest two weeks heve you walked for exercise?

YES	1	
NO	2	(PU49e)
REFUSED	-7	(PU49s)
DON'T KNOW	-8	(PU49s)

PU48h. How ofteo hava you walked for exercise in the pest 2 weeks?

_____
NUMBER OF TIMES

PU48c. What ia the averaga amount of time that you spent per sessioo?

HOURS	1
MINUTES	2

PU48d. How many mooths per yaar do you welk for exercise?

_____
MONTHS

PU49a. Duriog the paat two weeks have you done moderately strenuous household chores, lika scrubhiog aod vacuuming?

YES	1	
NO	2	(PU50e)
REFUSED	-7	(PU50e)
DON'T KNOW	-8	(PU50e)

PU49h. How often have you dooe moderately strenuous household choras, like scrubhiog aod vacuuming, io the past 2 weeks?

_____
NUMBER OF TIMES

PU49c. What ia the average amount of time that you spent par saasioo?

HOURS	1
MINUTES	2

PU49d. How many months per year do you do moderately strenuous household chores, like scrubbing and vacuuming?

_____
MONTHS

PU50a. During the past two weeks have you done moderately strenuous outdoor chores like mowing or raking the lawn, shoveling snow, or working in the garden?

YES	1	
NO	2	(PU51a)
REFUSED	-7	(PU51a)
DON'T KNOW	-8	(PU51a)

PU50b. How often have you done moderately strenuous outdoor chores, like mowing or raking the lawn, shoveling snow, or working in the garden, in the past 2 weeks?

_____
NUMBER OF TIMES

PU50c. What is the average amount of time that you spent per session?

HOURS	1
MINUTES	2

PU50d. How many months per year do you do moderately strenuous outdoor chores like mowing or raking the lawn, shoveling snow, or working in the garden?

_____
MONTHS

PU51a. During the past two weeks have you danced?

YES	1	
NO	2	(PU52a)
REFUSED	-7	(PU52a)
DON'T KNOW	-8	(PU52a)

PU51b. How often have you danced in the past two weeks?

_____
NUMBER OF TIMES

PU51c. What is the average amount of time that you spent per session?

HOURS	1
MINUTES	2

PU51d. How many months per year do you dance?

_____
MONTHS

PU52a. During the past two weeks have you gone bowling?

YES	1	
NO	2	(PU53a)
REFUSED	-7	(PU53a)
DON'T KNOW	-8	(PU53a)

PU52b. How often have you gone bowling in the past 2 weeks?

_____
NUMBER OF TIMES

PU52c. What is the average amount of time that you spent per session?

HOURS	1
MINUTES	2

PU52d. How many months per year do you go bowling?

_____
MONTHS

PU53a. During the past two weeks have you participated in any regular exercise program such as stretching or strengthening exercises, swimming or any other regular exercise program?

YES	1	
NO	2	(PU54a)
REFUSED	-7	(PU54a)
DON'T KNOW	-8	(PU54a)

PU53b. How often have you participated in any regular exercise program, such as stretching or strengthening exercises, swimming or any other regular exercise program, in the past 2 weeks?

_____
NUMBER OF TIMES

PU53c. What is the average amount of time that you spent per session?

HOURS	1
MINUTES	2

PU53d. How many months per year do you participated in any regular exercise program such as stretching or strengthening exercises, swimming or any other regular exercise program?

_____
MONTHS

PU54. Think about the walking you do outside your home. During the last week, about how many city blocks or their equivalent did you walk? (Let 1 mile = 12 city blocks.)

[ENTER '0' IF LESS THAN ONE BLOCK.]

_____
BLOCKS

PU55. When you walk outside your home, what is your usual pace? Would you say . . .

Casual strolling, from 0 to 2.0 mph,	1
Average or normal, from 2.0 to 3.0 mph,	2
Fairly briskly, from 3.0 to 4.0 mph, or	3
Brisk or striding, greater than 4.0 mph?	4
NO WALKING AT ALL	5
REFUSED	-7
DON'T KNOW	-8

PU56. Think about how often you use stairs. Include stairs inside and outside your home, and stairs at other places. In the last week, about how many flights of stairs did you climb up?

_____
FLIGHTS OF STAIRS

PU57a. How many hours do you usually sleep at night?

_____
HOURS SLEEP AT NIGHT

PU57b. How many hours do you usually sleep during the day?

_____
HOURS SLEEP DURING DAY

PU57c. How many hours are you sitting or lying down during the day (,other than when you are sleeping)?

_____
HOURS SITTING OR LYING

PU58. Do you attend church or church functions?

YES	1	
NO	2	(PU60)
REFUSED	-7	(PU60)
DON'T KNOW	-8	(PU60)

PU59. How often do you attend church or church functions? Would you say...

More than once a week,	1
Once a week,	2
2-3 times a month,	3
Once a month, or	4
Less than once a month?	5
REFUSED	-7
DON'T KNOW	-8

PU60. Did you use to attend church or church functions more frequently, less frequently, or has there been no change?

MORE FREQUENTLY,	1
LESS FREQUENTLY	2
NO CHANGE	3
REFUSED	-7
DON'T KNOW	-8

PU61. Do you attend other events such as concerts, movies, or ethnic festivals?

YES	1	
NO	2	(NEINTROA)
REFUSED	-7	(NEINTROA)
DON'T KNOW	-8	(NEINTROA)

PU62. How often do you attend other events? Would you say...

More than once a week,	1
Once a week,	2
2-3 times a month,	3
Once a month, or	4
Less than once a month?	5
REFUSED	-7
DON'T KNOW	-8

SECTION NE: NEUROLOGIC

NEINTROA. Now I have some more questions about other conditions and how they affect you.

(SKIP: IF S4h (HRND.SCRSTROK) = 2, -7 OR -8 GO TO BOX NE5. OTHERWISE, GO TO NE1.)

NE1. Earlier you mentioned that a doctor has told you that you have had a stroke.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET NE1 (NEUR.STROKE) = 1, GO TO NE2. IF 2 SET NE1 (NEUR.STROKE) = 2, THEN GO TO BOX NE5.)

NE2. How many strokes have you had?

_____
STROKES

(SKIP: IF NE2 (NEUR.STROKNUM) = 1, GO TO NE4. OTHERWISE, GO TO NE3.)

NE3. What was the date of your first stroke?

_____/_____/_____
MONTH DAY YEAR

NE4. What was the date of your (most recent) stroke?

_____/_____/_____
MONTH DAY YEAR

NE5. What was the name of the doctor who diagnosed your (most recent) stroke? (See AR3.)

NE5a. What is (PROVIDER)'s address? (Same as AR4.)

NE6. Have you ever been hospitalized for a stroke?

YES	1	
NO	2	(NE9)
REFUSED	-7	(NE9)
DON'T KNOW	-8	(NE9)

NE7. What was the name of the hospital where you were (most recently) hospitalized for a stroke? (See AR8.)

NE7a. What is (FACILITY)'s address? (Same as AR9.)

NE8. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (ADMTNMM, ADMTNDD, OR ADMTNYY = -7 OR -8), THEN GO TO NE8a. OTHERWISE, GO TO NE9.)

NE8a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

NE9. After (any of) your stroke(s), did you have weakness in your left face?

YES	1	(NE9a)
NO	2	(NE10)
REFUSED	-7	(NE10)
DON'T KNOW	-8	(NE10)

NE9a. Do you still have the problem?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE10. After (any of) your stroke(s), did you have weakness in your left arm or hand?

YES	1	(NE10a)
NO	2	(NE11)
REFUSED	-7	(NE11)
DON'T KNOW	-8	(NE11)

NE10a. Do you still have the problem?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE11. After (any of) your stroke(s), did you have weakness in your left leg or foot?

YES	1	(NE11a)
NO	2	(NE12)
REFUSED	-7	(NE12)
DON'T KNOW	-8	(NE12)

NE11a. Do you still have the problem?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE12. After (any of) your stroke(s), did you have weakness in your right face?

YES	1	(NE12a)
NO	2	(NE13)
REFUSED	-7	(NE13)
DON'T KNOW	-8	(NE13)

NE12a. Do you still have the problem?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE13. After (any of) your stroke(s), did you have weakness in your right arm or hand?

YES	1	(NE13a)
NO	2	(NE14)
REFUSED	-7	(NE14)
DON'T KNOW	-8	(NE14)

NE13a. Do you still have the problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE14. After (any of) your stroke(s), did you have weakness in your right leg or foot?

YES	1	(NE14a)
NO	2	(NE15)
REFUSED	-7	(NE15)
DON'T KNOW	-8	(NE15)

NE14a. Do you still have the problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE15. Did you have a sudden loss or change in speech as a result of (any of) your stroke(s)?

YES	1	
NO	2	(NE22)
REFUSED	-7	(NE22)
DON'T KNOW	-8	(NE22)

NE16. Do you still have this problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE17. Do any of the following describe your change in speech. Your speech was slurred like you were drunk. Does that describe your change in speech?

YES	1	
NO	2	(NE18)
REFUSED	-7	(NE18)
DON'T KNOW	-8	(NE18)

NE17a. Do you still have the problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE18. You could talk, but the wrong words came out. Does that describe your change in speech?

YES	1	
NO	2	(NE19)
REFUSED	-7	(NE19)
DON'T KNOW	-8	(NE19)

NE18a. Do you still have the problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE19. You knew what you wanted to say, but the words would not come out. Does that describe your change in speech?

YES	1	
NO	2	(NE20)
REFUSED	-7	(NE20)
DON'T KNOW	-8	(NE20)

NE19a. Do you still have the problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE20. You could not think of the right words. Does that describe your change in speech?

YES	1	
NO	2	(BOX NE4)
REFUSED	-7	(BOX NE4)
DON'T KNOW	-8	(BOX NE4)

NE20a. Do you still have the problem?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(BOX NE4. IF ANY COMBINATION OF NE17, NE18, NE19 AND NE20 = YES, (I.E., NE17 = YES AND NE20 = YES) THEN GO TO NE21. OTHERWISE, GO TO NE22.)

NE21. Which of these descriptions most closely describes your speech problems?

_____

SPEECH PROBLEM DESCRIPTION

NE22. After (any of) your stroke(s), did you have sudden loss or blurring of vision, either complete or partial?

YES	1	
NO	2	(NE26)
REFUSED	-7	(NE26)
DON'T KNOW	-8	(NE26)

NE23. Which eye was affected...

Only the right eye,	1	(NE25)
Only the left eye, or	2	(NE25)
Both eyes?	3	
REFUSED	-7	
DON'T KNOW	-8	

NE24. Did you have trouble seeing . . .

To the right but not to the left;	1
To the left but not to the right;	2
With both eyes or straight ahead?	3
REFUSED	-7
DON'T KNOW	-8

NE25. Do you still have this problem with your eyes?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE26. Did you have sudden numbness, tingling, or loss of feeling in either side of your body, including your face, arm or leg, as the result of any stroke?

YES	1	
NO	2	(NE29)
REFUSED	-7	(NE29)
DON'T KNOW	-8	(NE29)

NE27. Was the numbness, tingling or loss of feeling in...

Your right side only,	1
Your left side only, or	2
Both sides?	3
REFUSED	-7
DON'T KNOW	-8

NE28. Do you still have numbness, tingling or loss of feeling?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE29. Did you have sudden dizziness, loss of balance, or a sensation of spinning as the result of a stroke?

YES	1	
NO	2	(NEINTRO)
REFUSED	-7	(NEINTRO)
DON'T KNOW	-8	(NEINTRO)

NE30. Do you still have dizziness or loss of balance?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NEINTRO. Next I will ask you some additional questions about your concentration and your memory.

NE31. Please count from 1 to 5.

CORRECT	1
ERROR/REFUSED	0

NE32. Now I would like you to count backward from 5 to 1.

[CODE RESPONSE USING CODES BELOW.]

5 ___
4 ___
3 ___
2 ___
1 ___

CORRECT	1
ERROR/REFUSED	0

NE33. [POINT TO THE PART OF YOUR BODY.] What do you call this part of your (face/body)?

a. Forehead
b. Chin
c. Shoulder
d. Elbow
e. Knuckle

CORRECT	1
ERROR/REFUSED	0
NOT ATTEMPTED	SHIFT/7

NE34. What animals have four legs? PROBE ONCE: Can you think of any others?

[INTERVIEWER: THIS QUESTION IS A TIMED EXERCISE. ALLOW THE RESPONDENT ONLY 30 SECONDS TO ANSWER THIS QUESTION.]

_____
_____
_____
_____

(TOTAL NUMBER:_____)

NE35. Please repeat what I say: I would like to go (home/out).

CORRECT	2
1 OR 2 WORDS MISSED	1
3 OR MORE WORDS MISSED/REFUSED	0

(BOX NE5. IF S4k (HRND.SCRPRKNS) = 2, -7 OR -8 GO TO NE43. OTHERWISE, GO TO NE36.)

NE36. Earlier you mentioned that a doctor has told you that you have Parkinson's disease.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET NE36 (NEUR.BASPRKNS) = 1, THEN GO TO NE37. IF 2 SET NE36 (NEUR.BASPRKNS) = 2, THEN GO TO NE43.)

NE37. At what age were you first told you had Parkinson's disease?

_____
YEARS OLD

NE38. Are you currently being treated for Parkinson's disease?

YES	1	
NO	2	(NE41)
REFUSED	-7	(NE41)
DON'T KNOW	-8	(NE41)

NE39. What is the name of the doctor who is treating you. (See AR3.)

NE40. What is (PROVIDER)'s address? (Same as AR4.)

(SKIP: IF NE38 = 1, GO TO NE43.)

NE41. What was the name of the last doctor you saw for Parkinson's disease? (Similar to AR4.)

NE42. What is (PROVIDER)'s address? (Same as AR4.)

NE43. Do you have trouble rising from a chair?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE44. Is your handwriting smaller than it once was?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE45. Do people tell you that your voice is softer than it once was?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE46. Is your balance poor?

YES	1
NO	2
CAN'T STAND	3
REFUSED	-7
DON'T KNOW	-8

NE47. Do your feet suddenly seem to freeze in doorways?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE48. Do people tell you that your face seems less expressive than it once did?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE49. Do your arms or legs shake?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE50. Do you shuffle your feet or take tiny steps when you walk?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE51. Have you ever taken L-dopa or Sinemet?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE52. Is your sensation or sense of feeling normal or abnormal?

NORMAL	1	(NE63)
ABNORMAL	2	
REFUSED	-7	
DON'T KNOW	-8	

NE53a. Is your abnormal sensation found in your legs or feet?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE53b. Is your abnormal sensation found in your arms or hands?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE54. Have you ever burned yourself without feeling pain?

YES	1	
NO	2	(NE56)
REFUSED	-7	(NE56)
DON'T KNOW	-8	(NE56)

NE55. What was the date of the most recent burn?

_____/_____/_____
MONTH DAY YEAR

NE56. Do you have a prickly-asleep-numbness feeling of the feet, like when your hand goes to sleep from lying on it?

YES	1	
NO	2	(NE60)
REFUSED	-7	(NE60)
DON'T KNOW	-8	(NE60)

NE57. Does the numbness come only for a few minutes each time or does it last longer than that?

ONLY FOR A FEW MINUTES	1
LASTS LONGER	2
REFUSED	-7
DON'T KNOW	-8

NE58. Is it present most of the time?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE59. Have areas of numbness appeared and persisted for more than a few hours in different parts of your body?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE60. In your feet, do you have dead-asleep numbness, like novocaine, without prickling?

YES	1	
NO	2	(NE63)
REFUSED	-7	(NE63)
DON'T KNOW	-8	(NE63)

NE61. Does the numbness come only for a few minutes at a time or does it last longer than that?

ONLY A FEW MINUTES	1
LASTS LONGER	2
REFUSED	-7
DON'T KNOW	-8

NE62. Is it present most or all of the time?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

NE63. Have you fainted during the past year?

YES	1	
NO	2	(NE67)
REFUSED	-7	(NE67)
DON'T KNOW	-8	(NE67)

NE64. How many times did you faint in the past year?

_____
TIMES

NE65. Did this happeo when you were staodiog or seated or both?

STANDING	1	
SEATED	2	
BOTH	3	
OTHER (SPECIFY)	91	
REFUSED	-7	
DON'T KNOW	-8	

NE66. Do you faiot more frequeotly oow thao ooe year ago, less frequeotly, or about the same?

MORE FREQUENTLY	1	
LESS FREQUENTLY	2	
ABOUT THE SAME	3	
REFUSED	-7	
DON'T KNOW	-8	

NE67. Do you ever lose cootrol of oormal bowal movemeots so that you soil yourself?

YES	1	
NO	2	(NE70a)
COLOSTOMY/ILEOSTOMY BAG	3	(NE70a)
REFUSED	-7	(NE70a)
DON'T KNOW	-8	(NE70a)

NE68. Do you have soma control or no control?

SOME CONTROL	1	
NO CONTROL	2	
REFUSED	-7	
DON'T KNOW	-8	

NE69. Do you have occasional soiliog or does it happao all the tima?

OCCASIONAL	1	
ALL THE TIME	2	
REFUSED	-7	
DON'T KNOW	-8	

NE70a. In the last yaar hava you had any problem with pain, burniog or stiogiog whao you urinate?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE70b. Io tha last yaar hava you had any problem with uriosry tract iofactions?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE70c. In the last yaar have you had any problem with blood io your urioa?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE70d. Io the last year hava you had any problem with accidantally losiog cootrol of your urina or bladder functioo - that is, do you wet yourself?

YES	1	
NO	2	
CATHETERIZED	3	(GO TO NEXT SECTION)
REFUSED	-7	
DON'T KNOW	-8	

NE70e. In the last year have you had aoy problem with losiog cootrol of your urioa whan you cough, sneeze, laugh, or lift thiogs?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

NE70f. Io the last yesr have you had any problem with losiog cootrol of your urioa bacause you could not gat to tha toilat quickly enough?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF NE70d, NE70e OR NE70f = 1, GO TO NE71. OTHERWISE, GO TO CAINTRO)

NE71. During the past month, how often have you lost cootrol of your urioe? Would you say . . .

Several times a day,	1	
Once a day,	2	
Several times a week,	3	
Once a week,	4	
Less thao ooce a week, or	5	
Never?	6	
REFUSED	-7	
DON'T KNOW	-8	

NE72. When you lose control of your urine, approximately how much urine do you lose? Would you say . . .

A few drops,.....	1
Less than or equal to 1 teaspoon,.....	2
More than 1 teaspoon, but Less than or equal to 1/4 cup, or	3
More than 1/4 cup?.....	4
REFUSED.....	-7
DON'T KNOW.....	-8

NE73. How many times during a typical night do you get up to urinate?

_____
TIMES PER NIGHT

SECTION CA: CANCER

CAINTRO. Now, I'd like to ask you about other diseases.

(SKIP: IF S4i (HRND.SCRCANCR) = 2, -7 OR -8, THEN GO TO CA35. OTHERWISE, GO TO CA1.)

CA1. Earlier you mentioned that a doctor has told you that you had cancer.

PARTICIPANT MAINTAINS EARLIER RESPONSE.....	1
PARTICIPANT CHANGES EARLIER RESPONSE.....	2

(SKIP: IF 1 SET CA1 (HRND.BASCANCR) = 1, THEN GO TO CA2. IF 2 SET CA1 (HRND.BASCANCR) = 2, THEN GO TO CA35.)

CA2. Where was the most recent tumor or malignancy located? (What type of cancer did you have?)
(PROBE: Were there any other places?) [CODE ALL THAT APPLY.]

BRAIN.....	1	LYMPH GLANDS.....	8
BREAST.....	2	MELANOMA.....	9
CERVIX.....	3	MULTIPLE MYELOMA.....	10
COLON/BOWEL...	4	RECTUM.....	11
ESOPHAGUS.....	5	SKIN.....	12
LEUKEMIA.....	6	STOMACH.....	13
LUNG.....	7	UTERUS.....	14
OTHER (SPECIFY)_____			91
OTHER (SPECIFY)_____			92
OTHER (SPECIFY)_____			93

CA3. In what month and year were you first told by a doctor that you had (CA2 CANCER)?

_____/_____
MONTH YEAR

CA4. What was the name of the doctor who told you that you had this cancer? (See AR3.)

CA5. What is (PROVIDER)'s address? (See AR4.)

CA6. Has a doctor told you that the (CA2 CANCER) has spread to parts of your body beyond where it started?

YES.....	1	
NO.....	2	(CA8)
REFUSED.....	-7	(CA8)
DON'T KNOW.....	-8	(CA8)

CA7. Where did the cancer spread? [CODE ALL THAT APPLY.]

BRAIN.....	1	LYMPH GLANDS.....	8
BREAST.....	2	MELANOMA.....	9
CERVIX.....	3	MULTIPLE MYELOMA.....	10
COLON/BOWEL...	4	RECTUM.....	11
ESOPHAGUS.....	5	SKIN.....	12
LEUKEMIA.....	6	STOMACH.....	13
LUNG.....	7	UTERUS.....	14
OTHER (SPECIFY)_____			91
OTHER (SPECIFY)_____			92
OTHER (SPECIFY)_____			93

CA8. Were you ever hospitalized overnight or longer for this (CA2 CANCER)?

YES.....	1	
NO.....	2	(CA13)
REFUSED.....	-7	(CA13)
DON'T KNOW.....	-8	(CA13)

CA8a. How many times were you hospitalized for this cancer?

_____
TIMES

(SKIP: IF CA8a > 1, -7 OR -8, THEN GO TO CA9. OTHERWISE, GO TO CA11.)

CA9. What was the name of the hospital you first stayed in for this cancer? (See AR8.)

CA9a. What is (FACILITY)'s address? (See AR9.)

CA10. When were you admitted to the hospital?

_____/_____/_____
MONTH DAY YEAR

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO CA10a. OTHERWISE, GO TO CA11.)

CA10a. When were you discharged?

_____/_____/_____
MONTH DAY YEAR

CA11. What was the name of the hospital you (last) stayed io for this cancer? (See AR8.)

CA11a. What is (FACILITY)'s address? (Same as AR9.)

CA12. When were you admitted to the hospital? (See CA10.)

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO CA12e. OTHERWISE, GO TO CA13.)

CA12a. Wheo were you discharged? (See CA10a.)

CA13. Have you had surgery for the (CA2 CANCER)?

YES	1	
NO	2	(CA18)
REFUSED	-7	(CA18)
DON'T KNOW	-8	(CA18)

CA13a. How many times did you have surgery for this caocer?

_____
TIMES

(SKIP: IF CA13a > 1, -7 OR -8, THEN GO TO CA14. OTHERWISE, GO TO CA16.)

CA14. Where was the first surgery performed? (See AR8.)

CA14a. What is (FACILITY)'s address. (Same as AR9.)

CA15. Wheo were you admitted to the hospital? (See CA10.)

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO CA15e. OTHERWISE, GO TO CA16.)

CA15a. Wheo were you discharged? (See CA10e.)

CA16. Where was the (most receot) surgery performed? (See AR8.)

CA16a. What is (FACILITY)'s eddress? (See AR9.)

CA17. Wheo were you edmitted to the hospital? (See CA10.)

(SKIP: IF ANY ADMISSION DATE FIELD MISSING (DATS. DATE1MM, DATE1DD OR DATE1YY = -7 OR -8), THEN GO TO CA17e. OTHERWISE, GO TO CA18.)

CA17a. Wheo were you discharged? (See CA10a.)

CA18. Did you receive rsdistioo or x-rey treetmeot for the (CA2 CANCER)?

YES	1	
NO	2	(CA23)
REFUSED	-7	(CA23)
DON'T KNOW	-8	(CA23)

CA19. Where was the first redietioo treetmeot giveo? (See AR8.)

CA19a. What is (FACILITY)'s eddress? (See AR9.)

CA20. What was the date of the first radiatioo treetment that you received?

_____/_____/_____
MONTH DAY YEAR

CA21. Where was the last redietioo treetment giveo? (See AR8.)

CA21a. What is (FACILITY)'s eddress? (See AR9.)

CA22. What was the date of the last rediation treetment thet you received?

[INTERVIEWER: IF STILL RECEIVING RADIATION ENTER "95" FOR MONTH.]

_____/_____/_____
MONTH DAY YEAR

CA23. Have you received chemotherapy, that is either pills or iojectioos or both, for the (CA2 CANCER)?

YES	1	
NO	2	(CA28)
REFUSED	-7	(CA28)
DON'T KNOW	-8	(CA28)

CA24. Where was the first chemotherapy treatmeot given? See CA9 for recordiog iostructions.

CA24a. What is (FACILITY)'s address? (See AR9.)

CA25. What was the date of the first chemotherapy treatment thet you received?

_____/_____/_____
MONTH DAY YEAR

CA26. Where was the last chemotherapy treatmeot giveo? (See AR8.)

CA26a. What is (FACILITY)'s address? (See AR9.)

CA27. What was the date of the last chemotherapy treatment that you received?

_____/_____/_____
MONTH DAY YEAR

CA28. During the past month have you had pain due to your (CA2 CANCER)?

YES	1	
NO	2	(CA31)
REFUSED	-7	(CA31)
DON'T KNOW	-8	(CA31)

CA29. Using this card, please rate the pain you have had on average during the past month by giving me a number from 0 to 10, where 0 is no pain and 10 is severe or excruciating pain, as bad as you can imagine.

[HAND SHOW CARD F TO RESPONDENT.]

_____
PAIN CATEGORY

CA30. Please tell me how much relief you got, on average during the past month, from medications or other treatments you were given for pain. Would you say...

Complete relief,	1
Almost complete relief,	2
Partial relief,	3
Very little relief, or	4
No relief?	5
REFUSED	-7
DON'T KNOW	-8

CA31. Considering all the ways your cancer affects you please give me a number that reflects how well you are doing when 0 = very poor and 10 = very well. [HAND SHOW CARD L TO RESPONDENT.]

_____
WELLNESS CATEGORY

(SKIP: IF CALOC1, CALOC2, CALOC3, CALOC4, OR CALOC5 = 52 (BREAST CANCER) AND CA13 (COND.OPERCOND) = 1, OR IF CA7 (COND.SPRDWHR1, SPRDWHR2, OR SPRDWHR3) = 52 (BREAST CANCER), THEN GO TO CA32. OTHERWISE, GO TO BOX CA10.)

CA32. Is the movement of your arm limited as a result your breast surgery?

YES	1	
NO	2	
NO BREAST SURGERY	3	
REFUSED	-7	
DON'T KNOW	-8	

(BOX CA10: IF CALOC1, CALOC2, CALOC3, CALOC4, OR CALOC5 = 54 (COLON CANCER) AND CA13 (COND.OPERCOND) = 1, OR IF CA7 (COND.SPRDWHR1, SPRDWHR2, OR SPRDWHR3) = 54 (COLON CANCER), THEN GO TO CA33. OTHERWISE, GO TO BOX CA11.)

CA33. Do you have difficulties with your bowels as a result of your colon surgery?

YES	1	
NO	2	(BOX CA11)
NO COLON SURGERY	3	(BOX CA11)
REFUSED	-7	(BOX CA11)
DON'T KNOW	-8	(BOX CA11)

CA34a. What difficulties do you have? Do you have constipation?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

CA34b. Do you have diarrhea?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(BOX CA11: FOR EACH CANCER SELECTED OR ADDED AT CA2, ASK CA3 - CA34b, THEN GO TO CA35.)

CA35. Are there any other conditions or diseases that you have that I haven't asked about?

YES	1	
NO	2	(ACINTRO)
REFUSED	-7	(ACINTRO)
DON'T KNOW	-8	(ACINTRO)

CA36. What are they? ENTER VERBATIM BELOW.]

_____
_____
_____

SECTION AC: ACTIVITIES

Next, I would like to talk about some of your other daily activities.

(SKIP: IF S27 = 2, -7 OR -8, GO TO AC2. IF S27 = 3 AND S28 = 91, -7 OR -8, GO TO AC7. OTHERWISE, GO TO AC1.)

AC1. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (prepare/preparing) meals

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET AC1 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET AC1 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO AC2. IF AC1 = 1 AND DALY.DONTACT = 1, THEN GO TO AC4a. IF BASDFLVL = 4 GO TO AC4a. OTHERWISE, GO TO AC2.)

AC2. Hava you cut back on tha numbar of maals you prapara bacausa your haalth makas it difficult?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AC3. Have you changad the types of food you prapara or givan up preparing certain foods becausa your health makes it difficult?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP. IF AC1 = 1, GO TO AC4a. IF AC1 = 2, OR -1 AND AC2 AND AC3 = = 2, -7 OR -8, GO TO AC7. IF AC1 = 2, OR -1 AND EITHER AC2 OR AC3 = YES, GO TO AC6.)

AC4a. How long ago did you first start having difficulty preparing maals.

MONTHS	1
YEARS	2

(SKIP: IF AC4a = -7 OR -8, THEN GO TO AC5. OTHERWISE, GO TO AC6.)

AC5. Using this card, how long ago did you first start having difficulty preparing meals? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

AC6. What is tha main condition that (causas you to hava difficulty/prevents you from) praparing maals?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC7. Who has the main responsibility for praparing maals in your homa?

SELF	1	(AC10)
SOMEONE ELSE	2	(AC8)
REFUSED	-7	(AC10)
DON'T KNOW	-8	(AC10)

AC8. Who helps you? [ENTER ONLY ONE HELPER.]

AC9. Is (PERSON) praparing maals bacausa your haalth makas it difficult for you, or for soma other raason?

HEALTH MAKES IT DIFFICULT	1
OTHER REASON (SPECIFY) _____	91
REFUSED	-7
DON'T KNOW	-8

AC10. Does (a/any other) friand or ralativa come in to your home to help you prapara maals or bring you maals on a ragular basis?

YES	1	
NO	2	(AC12a)
REFUSED	-7	(AC12a)
DON'T KNOW	-8	(AC12a)

AC11. Who helps you? [ENTER UP TO THREE HELPERS.]

AC12a. Do you get maals on whaals?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AC12b. Do you regularly go out to eat at an Eating Togathar program such as at a Senior Cantar or church?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AC12c. Do you usually eat maals alone?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AC12d. Do you eat most of your maals in restaurants?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

AC13. Doas tha place where you liva provida group meals?

YES	1	
NO	2	(AC15)
REFUSED	-7	(AC15)
DON'T KNOW	-8	(AC15)

AC14. Do you usually aat at those group meals?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF S25 (MVNT.SCRDFHHW) = 2, -7 OR -8, GO TO AC17. IF S25 =3 AND S26 (DALY.DONTACT) = 91, -7 OR -8, GO TO AC21. OTHERWISE, GO TO AC15.)

AC15. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (do/doing) heavy housework such as washing windows, walls, or floors.

PARTICIPANT MAINTAINS EARLIER RESPONSE.....	1
PARTICIPANT CHANGES EARLIER RESPONSE.....	2

(SKIP: IF 1 SET AC15 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET AC15 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO AC17. IF AC15 = 1 AND DALY.DONTACT = 1, THEN GO TO AC18a. IF BASDFLVL = 4 GO TO AC18a. OTHERWISE, GO TO AC17.)

AC17. Do you do heavy housework such as washing windows, walls, or floors by yourself less often than you used to?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

AC18. Do you do heavy housework such as washing windows, walls, or floors by yourself differently than you used to?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

(SKIP: IF AC15 = 1, GO TO AC18a. IF AC15 = 2 OR -1 AND AC17 AND AC18 = 2, -7 OR -8, GO TO AC21. IF AC15 = 2 OR -1 AND EITHER AC17 OR AC18 = 1, GO TO AC20.)

AC18a. How long ago did you first start having difficulty doing heavy housework such as washing windows, walls, or floors by yourself?

MONTHS.....	1
YEARS.....	2

(SKIP: IF AC18a = -7 OR -8, THEN GO TO AC19. OTHERWISE, GO TO AC20.)

AC19. Using this card, how long ago did you first start having difficulty (doing heavy housework such as washing windows, walls, or floors by yourself)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

AC20. What is the main condition that (causes you to have difficulty/prevents you from) doing heavy housework (such as washing windows, walls, or floors)?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC21. Do you usually receive help from another person in doing heavy housework such as washing windows, walls, or floors?

YES.....	1	(AC22)
NO.....	2	(AC23)
REFUSED.....	-7	(AC23)
DON'T KNOW.....	-8	(AC23)

AC22. Who helps you? [ENTER UP TO THREE HELPERS.]

(SKIP: IF S23 (MVNT.SCRDFLHW) = 2, -7 OR -8; OR IF S23 = 3 AND S24 (DALY.DONTACT) = 91, -7 or -8, GO TO AC27. OTHERWISE, GO TO AC23.)

AC23. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (do/doing) light housework such as doing dishes, straightening up, or light cleaning.

PARTICIPANT MAINTAINS EARLIER RESPONSE.....	1
PARTICIPANT CHANGES EARLIER RESPONSE.....	2

(SKIP: IF 1 SET AC23 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL AND GO TO AC24a. IF AC23 = 1 AND DALY.DONTACT = 1, GO TO AC24a. IF 2 SET AC23 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO AC27.)

AC24a. How long ago did you first start having difficulty doing light housework such as doing dishes, straightening up, or light cleaning by yourself?

MONTHS.....	1
YEARS.....	2

(SKIP: IF AC24a = -7 OR -8, THEN GO TO AC25. OTHERWISE, GO TO AC26.)

AC25. Using this card, how long ago did you first start having difficulty (doing light housework such as doing dishes, straightening up, or light cleaning by yourself)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

AC26. What is the main condition that (causes you to have difficulty/prevents you from) doing light housework (such as doing dishes, straightening up, or light cleaning)?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC27. Do you usually receive help from another person in doing light housework such as doing dishes, straightening up, or light cleaning?

YES.....	1	(AC28)
NO.....	2	(AC29)
REFUSED.....	-7	(AC29)
DON'T KNOW.....	-8	(AC29)

AC28. Who helps you? [ENTER UP TO THREE HELPERS.]

(SKIP: IF S29 (MVNT.SCRDFSHP) = 2, -7 OR -8, GO TO AC31. IF S29 = 3 AND S30 (DALY.DONTACT) = 91, -7 OR -8, GO TO AC35. OTHERWISE, GO TO AC29.)

AC29. Earlier you mentioned that, by yourself, you (have difficulty/are unable to) (shop/shopping) for personal items such as medicines or toilet items.

PARTICIPANT MAINTAINS EARLIER RESPONSE.....	1
PARTICIPANT CHANGES EARLIER RESPONSE.....	2

(SKIP: IF 1 SET AC29 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL. IF 2 SET AC29 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO AC31. IF AC29 = 1 AND DALY.DONTACT = 1, GO TO AC32a. IF BASDFLVL = 4 GO TO AC32a. OTHERWISE, GO TO AC31.)

AC31. Do you shop for personal items such as medicioes or toilet items less ofteo theo you used to?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

AC32. Do you shop for persooal items such as medicines or toilet items differeotly thao you used to?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF AC29 = 1, GO TO AC32a. IF AC29 = 2 OR -1 AND AC31 AND AC32 = 2, -7 OR -8, GO TO AC35. IF AC29 = 2 OR -1 AND EITHER AC31 OR AC32 = 1, GO TO AC34.)

AC32a. How loog ago did you first start heviog difficulty shoppiog for persooal items such as medicioes or toilet items by yourself?

MONTHS	1
YEARS	2

(SKIP: IF AC32a = -7 OR -8, THEN GO TO AC33. OTHERWISE, GO TO AC34.)

AC33. Using this card, how loog ago did you first stert haviog difficulty (shoppiog for persooal items such es medicines or toilet items by yourself)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

AC34. What is the maio cooditioo that (ceuses you to heve difficulty/preveots you from) shoppiog for persooal items such es medicioes or toilet items?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC35. Do you usually receive help from enother persoo in shoppiog for persoool items such es medicioes or toilet items?

YES	1	(AC36)
NO	2	(AC37)
REFUSED	-7	(AC37)
DON'T KNOW	-8	(AC37)

AC36. Who helps you? [ENTER UP TO THREE HELPERS.]

(SKIP: IF S21 (MVNT.SCRDFTEL) = 2, -7 OR -8; OR IF S21 =3 AND S22 (DALY.DONTACT) = 91, -7 OR -8, GO TO AC41. OTHERWISE, GO TO AC37.)

AC37. Eerlier you mentiooed that, by yourself, you (have difficulty/ere unable to) (use/using) the telephooe.

PARTICIPANT MAINTAINS EARLIER RESPONSE	1
PARTICIPANT CHANGES EARLIER RESPONSE	2

(SKIP: IF 1 SET AC37 = 1 AND SET VARIABLE DALY.BASDFLVL = SCRDFLVL AND GO TO AC38e. IF AC37 = 1 AND DALY.DONTAACT = 1, GO TO AC38a. IF 2 SET AC37 = 2 AND SET VARIABLE DALY.BASDFLVL = -1, THEN GO TO AC41.)

AC38a. How loog ego did you first stert heviog difficulty usiog the telephooe by yourself?

MONTHS	1
YEARS	2

(SKIP: IF AC38a = -7 OR -8, THEN GO TO AC39. OTHERWISE, GO TO AC40.)

AC39. Usiog this card, how loog ego did you first stert heving difficulty (using the telephone by yourself)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

AC40. What is the maio cooditioo thet (ceuses you to heve difficulty/prevents you from) using the telephooe?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC41. Do you usually receive help from eoother persoo io usiog the telephooe?

YES	1	(AC42)
NO	2	(AC43)
REFUSED	-7	(AC43)
DON'T KNOW	-8	(AC43)

AC42. Who helps you? [ENTER UP TO THREE HELPERS.]

AC43. Because of e health or physicel problem, do you heve eoy difficulty tekiog medicetioos by yourself.

YES	1	(AC45)
NO	2	(AC48)
DON'T DO	3	(AC44)
REFUSED	-7	(AC48)
DON'T KNOW	-8	(AC48)

AC44. Is this for health reasoos or other reasoos?

HEALTH	1	(AC45a)
OTHER REASONS (SPECIFY)_____	2	(AC48)
REFUSED	-7	(AC48)
DON'T KNOW	-8	(AC48)

AC45. How much difficulty do you have tekiog medications by yourself?

[HAND SHOW CARD BLUE TO RESPONDENT.]

AC45a. How long ago did you first start having difficulty takiog your medicatioos by yourself?

MONTHS	1
YEARS	2

(SKIP: IF AC45e = -7 OR -8, THEN GO TO AC46. OTHERWISE, GO TO AC47.)

AC46. Using this card, how long ago did you first start having difficulty (taking your medications by yourself)? Would you say...

[HAND SHOW CARD PINK TO RESPONDENT.]

AC47. What is the main condition that (causes you to have difficulty/prevents you from) taking your medications by yourself?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC48. Do you usually receive help from another person in taking your medications?

YES	1	(AC49)
NO	2	(AC50)
REFUSED	-7	(AC50)
DON'T KNOW	-8	(AC50)

AC49. Who helps you? [ENTER UP TO THREE HELPERS.]

AC50. Do you have any difficulty managing your money, for example, paying bills or keeping a bank account, by yourself and without help from another person?

YES	1	
NO	2	
DOESN'T DO	3	(AC52)
REFUSED	-7	
DON'T KNOW	-8	

AC51. Are you less involved in managing your money than you used to be because your health or physical condition makes it difficult?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

(SKIP: IF AC50 = 1 GO TO AC53. IF AC50 AND AC51 = 2, -7 OR -8 GO TO AC56. IF AC50 = 2, -7 OR -8 AND AC51 = 1, GO TO AC55.)

AC52. Is this for health reasons or for some other reason?

HEALTH	1	(AC53a)
OTHER REASONS (SPECIFY)_____	2	(AC56)
REFUSED	-7	(AC56)
DON'T KNOW	-8	(AC56)

AC53. How much difficulty do you have? Would you say . . .

[HAND SHOW CARD BLUE TO RESPONDENT.]

AC53a. How long ago did you first start having difficulty managing your money?

MONTHS	1
YEARS	2

(SKIP: IF AC53a = -7 OR -8, THEN GO TO AC54. OTHERWISE, GO TO AC55.)

AC54. Using this card, how long ago did you first start having difficulty managing your money? Would you say . . .

[HAND SHOW CARD PINK TO RESPONDENT.]

AC55. What is the main condition that (makes you less involved/causes you to have difficulty/prevents you from) managing your money?

[TO PROBE: HAND SHOW CARD GREEN TO RESPONDENT.]

AC56. Who has the main responsibility for managing your money?

SELF	1	
SOMEONE ELSE	2	(AC58)
REFUSED	-7	
DON'T KNOW	-8	

AC57. Does another person usually help you with managing your money?

YES	1	
NO	2	(AC59)
REFUSED	-7	(AC59)
DON'T KNOW	-8	(AC59)

AC58. Who is this person? [ENTER ONLY ONE HELPER.]

AC59. When you go somewhere by car, who usually drives? Do you drive yourself, does someone with whom you live drive, or does someone outside your home drive?

SELF	1	(AC64)
SOMEONE IN HOME	2	
SOMEONE OUTSIDE HOME	3	
DOES NOT TRAVEL BY CAR	4	(AC61)
REFUSED	-7	(AC61)
DON'T KNOW	-8	(AC61)

AC60. Who helps you? [ENTER UP TO THREE HELPERS.]

AC61. Have you ever had a driver's license?

YES	1	
NO	2	(GDINTRO)
REFUSED	-7	(GDINTRO)
DON'T KNOW	-8	(GDINTRO)

(SKIP: IF AC59 = 4 AND AC61 = 1, SKIP TO AC63. OTHERWISE, CONTINUE.)

AC62. Do you still drive?

YES	1	(AC64)
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

AC63. Did you stop driving for health or vision reasons or for some other reason?

HEALTH	1	(GDINTRO)
VISION	2	(GDINTRO)
OTHER REASON (SPECIFY)	91	(GDINTRO)
REFUSED	-7	(GDINTRO)
DON'T KNOW	-8	(GDINTRO)

AC64. Over the last year, have you cut down on the amount you drive or when you drive (such as not driving at night or in the rain), because of your health or vision?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SECTION GD: GDS

GDINTRO. Now, I have some more questions about your satisfaction with your life.

GD-1. Are you basically satisfied with your life?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-2. Have you dropped many of your activities and interests?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-3. Do you feel that your life is empty?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-4. Do you often get bored?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-5. Are you hopeful about the future?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-6. Are you bothered by thoughts you can't get out of your head?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-7. Are you in good spirits most of the time?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-8. Are you afraid that something bad is going to happen to you?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-9. Do you feel happy most of the time?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-10. Do you often feel helpless?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-11. Do you often get restless and fidgety?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-12. Do you prefer to stay at home, rather than going out and doing new things?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-13. Do you frequently worry about the future?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-14. Do you feel you have more problems with memory than most?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-15. Do you think it is wonderful to be alive now?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-16. Do you often feel downhearted and blue?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-17. Do you feel pretty worthless the way you are now?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-18. Do you worry a lot about the past?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-19. Do you find life very exciting?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-20. Is it hard for you to get started on new projects?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-21. Do you feel full of energy?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-22. Do you feel that your situation is hopeless?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-23. Do you think that most people are better off than you are?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-24. Do you frequently get upset over little things?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-25. Do you frequently feel like crying?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-26. Do you have trouble concentrating?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-27. Do you enjoy getting up in the morning?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-28. Do you prefer to avoid social gatherings?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-29. Is it easy for you to make decisions?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-30. Is your mind as clear as it used to be?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-31. Please tell me whether you agree or disagree with this statement: I can do just about anything I really set my mind to. Would you say you agree or disagree?

AGREE	1	(GD-32)
DISAGREE	2	(GD-33)
REFUSED	-7	(GD-34)
DON'T KNOW	-8	(GD-34)

GD-32. Would you say you agree strongly or agree somewhat?

AGREE STRONGLY	1	(GD-34)
AGREE SOMEWHAT	2	(GD-34)
REFUSED	-7	(GD-34)
DON'T KNOW	-8	(GD-34)

GD-33. Would you say you disagree strongly or disagree somewhat?

DISAGREE STRONGLY	1	
DISAGREE SOMEWHAT	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-34. Do you agree or disagree with this statement: I often feel helpless in dealing with the problems of life.

AGREE	1	(GD-35)
DISAGREE	2	(GD-36)
REFUSED	-7	(GD-37)
DON'T KNOW	-8	(GD-37)

GD-35. Would you say you agree strongly or agree somewhat?

AGREE STRONGLY	1	(GD-37)
AGREE SOMEWHAT	2	(GD-37)
REFUSED	-7	(GD-37)
DON'T KNOW	-8	(GD-37)

GD-36. Would you say you disagree strongly or disagree somewhat?

DISAGREE STRONGLY	1	
DISAGREE SOMEWHAT	2	
REFUSED	-7	
DON'T KNOW	-8	

GD-37. During the past week, have you felt nervous or shaky inside?

YES	1	
NO	2	(GD-39)
REFUSED	-7	(GD-39)
DON'T KNOW	-8	(GD-39)

GD-38. How nervous or shaky have you felt? Would you say a little, quite a bit, or extremely nervous and shaky inside?

A LITTLE	1
QUITE A BIT	2
EXTREMELY	3
REFUSED	-7
DON'T KNOW	-8

GD-39. During the past week have you had to avoid certain things, places or activities because they frighten you?

YES	1	
NO	2	(GD-41)
REFUSED	-7	(GD-41)
DON'T KNOW	-8	(GD-41)_

GD-40. How much have you had to avoid certain things because they frighten you? Would you say a little, quite a bit, or extremely often?

A LITTLE	1
QUITE A BIT	2
EXTREMELY	3
REFUSED	-7
DON'T KNOW	-8

GD-41. During the past week have you felt tense or keyed up?

YES	1	
NO	2	(GD-43)
REFUSED	-7	(GD-43)
DON'T KNOW	-8	(GD-43)

GD-42. How much have you felt tense or keyed up? Would you say a little, quite a bit, or extremely tense or keyed up?

A LITTLE	1
QUITE A BIT	2
EXTREMELY	3
REFUSED	-7
DON'T KNOW	-8

GD-43. During the past week have you felt fearful?

YES	1	
NO	2	(GD-45)
REFUSED	-7	(GD-45)
DON'T KNOW	-8	(GD-45)

GD-44. How much have you felt fearful? Would you say a little, quite a bit, or extremely fearful?

A LITTLE	1
QUITE A BIT	2
EXTREMELY	3
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF DEMO. PTMARSTA = 2, GO TO GD45. OTHERWISE, GO TO BOX GD2.)

GD-45. Were you widowed within the past 12 months?

YES	1	(GD-47)
NO	2	(GD-47)
REFUSED	-7	(GD-47)
DON'T KNOW	-8	(GD-47)

(BOX GD2. SKIP: IF DEMO. PTMARSTA = 1, GO TO GD46. OTHERWISE, GO TO GD47.)

GD-46. Has your husband been seriously ill or had a serious accident within the past 12 months?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-47. Have you lost (a/any other) close relative or very close friend through death within the past 12 months?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-48. Have you been separated from a child, close friend or relative whom you depend on for help (within the past 12 months)?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-49. Did you lose a pet (in the past 12 months)?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-50. Have you had to give up a hobby or activity that is important to you in the past 12 months?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

GD-51. Did anything (else) happen to you, either good or bad, within the past 12 months, that was very important to you?

YES	1	
NO	2	(NEXT SECTION)
REFUSED	-7	(NEXT SECTION)
DON'T KNOW	-8	(NEXT SECTION)

GD-52. Whet wes thet?

_____
_____
_____

SECTION BA: BALANCE/FALLS

BAINTRO. Now I would like to ask you some questions about your halaoce.

BA-1a. Usiog this cerd, pleese tell me if you heve aoy prohlem with keepiog your haleoce wheo you ere walking oo a level surface. Would you say elways, very often, often, sometimes, or never?

[HAND SHOW CARD M TO RESPONDENT.]

_____
FREQUENCY

BA-1b. (Usiog this cerd, pleese tell me if you have aoy problem with keepiog your heleoce wheo you are. . .) dressing while steodiog. Would you say always, very ofteo, ofteo, sometimes, or never?

[HAND SHOW CARD M TO RESPONDENT.]

_____
FREQUENCY

BA-1c. (Usiog this cerd, pleese tell me if you have aoy prohlem with keepiog your helaoce when you are. . .) steoding with your eyes closed, such as staodiog io the shower. Would you sey elweys, very ofteo, often, sometimes, or oever?

[HAND SHOW CARD M TO RESPONDENT.]

_____
FREQUENCY

BA-1d. (Usiog this card, pleese tell me if you have aoy prohlem with keepiog your haleoce when you ere. . .) walkiog down steirs. Would you say always, very often, ofteo, sometimes, or oever?

[HAND SHOW CARD M TO RESPONDENT.]

_____
FREQUENCY

BA-2. Do you ever feel dizzy or light-headed efter standing up?

YES	1	
NO	2	
REFUSED	-7	
DON'T KNOW	-8	

BA-3. Heve you felleo io the past 12 mooths? Falliog iocludes felling oo the ground or et some other level, such es e chair.

YES	1	
NO	2	(BA-11)
REFUSED	-7	(BA-11)
DON'T KNOW	-8	(BA-11)

BA-4. How maoy times have you felleo io the lest 12 mooths?

_____
TIMES

BA-5. Did a medicel cooditioo such es e stroke, Parkiosoo's diseese, or e seizure disorder, cootribute to your (most receot) fell?

YES	1	
NO	2	(BA-7)
REFUSED	-7	(BA-7)
DON'T KNOW	-8	(BA-7)

BA-6. What was the medicel cooditioo?

STROKE	1
PARKINSON'S DISEASE	2
SEIZURE DISORDER	3
OTHER (SPECIFY)	91

_____

BA-7. Did medicetioo or medication side effects cootribute to your (most receot) fall?

YES	1	
NO	2	(BA-9)
REFUSED	-7	(BA-9)
DON'T KNOW	-8	(BA-9)

BA-8. What was the medication?

_____

BA-9. Did aoything in your house or outdoors cootribute to your (most recent) fall, such es e rug, stairs, a curh, or ice?

YES	1	
NO	2	(BA-11)
REFUSED	-7	(BA-11)
DON'T KNOW	-8	(BA-11)

BA-10. What else contributed?

[ENTER VERBATIM TEXT BELOW.]

_____

BA-11. Have you ever lost consciousness or passed out at the time of any fall?

YES	1	
NO	2	
NEVER FALLEN	3	(BA14)
REFUSED	-7	
DON'T KNOW	-8	

BA-12. What has been your most serious injury or problem due to any fall?

NEVER INJURED	1	(BA-14)
BRUISES	2	
CUTS	3	
DISCOMFORT	4	
FRACTURE OF LEG	5	
FRACTURE OF WRIST	6	
FRACTURE OF BACK/VERTEBRA	7	
HEAD INJURY	8	
OTHER (SPECIFY)_____	91	

BA-13. In approximately what month and year did the fall occur which resulted in your worst injury or prohlem?

_____/_____
MO YR

BA-14. In the past 12 months, have you ever heen anxious or worried or afraid you might fall?

YES	1	
NO	2	(SE1)

BA-15. How long have you heen afraid of falling? Would you say...

Less than 3 months,	1
3 to 12 months, or	2
More than 12 months?	3
REFUSED	-7
DON'T KNOW	-8

BA-16. Is falling something you are anxious or worried about ...

All of the time,	1
Most of the time,	2
Some of the time, or	3
Rarely?	4
REFUSED	-7
DON'T KNOW	-8

BA-17a. When you think you might fall, do you have lightheadedness or faintness?

YES	1
NO	2

BA-17b. (When you think you might fall, do you. . .) have spinning sensation or dizziness?

YES	1
NO	2

BA-17c. (When you think you might fall, do you. . .) have weakness?

YES	1
NO	2

BA-17d. (When you think you might fall, do you. . .) have halance prohlems, that is are you unsteady on your feet?

YES	1
NO	2

BA-17e. (When you think you might fall, do you. . .) have the feeling that your legs are giving out on you?

YES	1
NO	2

BA-17f. When you think you might fall, do you think it is due to problems seeing well?

YES	1
NO	2

BA-18. Do you ever limit your activities, for example, what you do or where you go, hecause you are afraid of falling?

YES	1	
NO	2	(NEXT SECTION)
REFUSED	-7	(NEXT SECTION)
DON'T KNOW	-8	(NEXT SECTION)

BA-19. Do you limit your activities hecause of a fear of falling...

Rarely,	1
Some of the time,	2
Most of the time, or	3
All of the time?	4
REFUSED	-7
DON'T KNOW	-8

SECTION SE: SEEING AND HEARING

SE-1. Do you have glasses or contact lenses?

YES	1	
NO	2	(SE-3)
REFUSED	7	(SE-3)
DON'T KNOW	8	(SE-3)

SE-2. Do you wear them...

Most of the time,.....	1
Sometimes,.....	2
For special reasons, such as reading or driving, or....	3
Never?.....	4
REFUSED.....	-7
DON'T KNOW.....	-8

SE-3. Can you see well enough (,with glasses if needed,) to drive?

YES.....	1
NO.....	2
DOESN'T DRIVE.....	3
REFUSED.....	-7
DON'T KNOW.....	-8

SE-4. Can you see well enough (,with glasses if needed,) to watch T.V.?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-5. Can you see well enough (,with glasses if needed,) to recognize someone across the room?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-6. Can you see well enough (,with glasses if needed,) to read the newspaper?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-7. Do you ever have trouble with blurred vision?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8a. Has a doctor ever told you that you had glaucoma or suspected glaucoma?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8b. (Has a doctor ever told you that you had. . .) a cataract in one eye?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8c. (Has a doctor ever told you that you had. . .) cataracts in both eyes, at the same time?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8d. (Has a doctor ever told you that you had. . .) diabetic retinopathy or eye disease from diabetes?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8e. (Has a doctor ever told you that you had. . .) diseases of the retina?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8f. (Has a doctor ever told you that you had. . .) macular degeneration or age related maculopathy?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8g. (Has a doctor ever told you that you had. . .) an eye injury which permanently reduced your ability to see?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-8h. (Has a doctor ever told you that you had. . .) double vision?

YES.....	1
NO.....	2
REFUSED.....	-7
DON'T KNOW.....	-8

SE-9. Do you use a hearing aid?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-10. Can you hear well enough (,with a hearing aid if necessary,) to use the telephone?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-11. Can you hear well enough (,with a hearing aid if necessary,) to carry on a conversation in a crowded room?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-12. Do you have trouble hearing another person if there is a radio or TV playing in the same room?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-13. Do you have difficulty hearing when someone speaks in a whisper?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

(SKIP: IF SE-9 = 2, AND SE-10 = 1, AND SE-11 = 1, AND SE-12 = 2, AND SE-13 = 2, THEN GO TO SE-19. OTHERWISE, GO TO SE-14.)

SE-14. Do people tend to leave you out of conversations because you don't hear well?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-15. Does a hearing problem cause you to feel frustrated when talking to members of your family?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-16. Does a hearing problem cause you to attend church, movies, concerts or other events less often than you would like?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-17. Does a hearing problem cause you to have arguments with family members?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-18. Does a hearing problem cause you difficulty when listening to television or the radio?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SE-19. Do you feel that any difficulty with your hearing limits or hampers your personal or social life?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SECTION DM: DEMOGRAPHICS

DMINTROA. Now I have some questions about the place where you live.

DM-1. Is it <u>necessary</u> to go up or down a step to get into this (house/apartment) from the outside?

YES	1	
NO	2	(DM-3)
REFUSED	-7	(DM-3)
DON'T KNOW	-8	(DM-3)

DM-2. Is it more than one step?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-3. Does this (house/apartmeot) heve e bethroom, bedroom, end kitcheo ell oo the same floor or level?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-4. Beceuse of a heelth or physicel problem, do you oeed e bethroom, bedroom, eod kitcheo ell oo the same floor or level?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-5. Does this (house/epertment) have e welk-in shower, thet is, where you don't step over the side of the tub to get ioto the shower?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-6. Because of a heelth or physicel problem, do you oeed e welk-io shower?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-7. How maoy rooms do you heve io your (house/epertmeot)?

_____
ROOMS

DM-8. Are there eoy rooms thet you heve stopped using because of your heelth or physicel cooditioo?

YES	1	(DM-8e)
NO	2	(DM-9)

DM-8e. How maoy?

_____
ROOMS

DM-9. How maoy living childreo do you heve includiog edopted childreo or childreo you have reised?

[ENTER "0" IF RESPONDENT SAYS NONE.]

_____
CHILDREN

(SKIP: IF VARIABLE DEMO.PTMARSTA = 1 AND/OR ENUM.HHPREL = 02, THEN ASK DM10 AND DM10e. OTHERWISE, GO TO DMINTROB.)

DM-10. Would you say that, io geoerel, your hushaod's heelth is . . .

Excelleot,	1
Good,	2
Fair, or	3
Poor?	4
REFUSED	-7
DON'T KNOW	-8

DM-10e. In the pest six mooths, has your hushend's health . . .

Improved,	1
Steyed the same, or	2
Gotten worse?	3
REFUSED	-7
DON'T KNOW	-8

DMINTROB. I am goiog to esk e few questioos about sources of income heceuse it is important to know how well public end privete programs for older people provide the resources people oeed es they are eging.

DM-11. Do you (or your hushood) receive moothly Socisl Security or Reilroed Retirement peyments? (READ IF NECESSARY: Socisl Security checks ere either eutomaticelly deposited in the hank or mailed to errive oo the 3rd of every mooth. If mailed, they ere seot io e gold colored eovelope.)

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-12. Do you (or your hushand) receive retiremeot peyments from former employment, for example privete pensions from employers or unioos, or Federal or State government retirement pleos?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-13. Do you (or your hushaod) have iocome from a curreot joh or husioess?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-14. Do you (or your husband) receive income from Supplemental Security Income or SSI? (READ IF NECESSARY: Federal SSI checks are either automatically deposited in the bank or mailed to arrive on the 1st of every month. If mailed, they are sent in a blue colored envelope.)

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-15. Do you (or your husband) receive food stamps?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-16. Do you (or your husband) receive income from stocks or mutual funds or income from rental property, royalties, estates or trusts?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-17. Do you (or your husband) receive any regular cash income from your children?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-18a. How often does it happen that you (and your husband) do not have enough money to afford the kind of food you (and your husband) should have? Would you say never, once in a while, fairly often or very often?

NEVER	1
ONCE IN A WHILE	2
FAIRLY OFTEN	3
VERY OFTEN	4
REFUSED	-7
DON'T KNOW	-8

DM-18b. How often does it happen that you (and your husband) do not have enough money to afford the kind of medical care you (and your husband) should have? Would you say never, once in a while, fairly often or very often?

NEVER	1
ONCE IN A WHILE	2
FAIRLY OFTEN	3
VERY OFTEN	4
REFUSED	-7
DON'T KNOW	-8

DM-18c. How often does it happen that you (and your husband) do not have enough money to afford meeting monthly payments on your bills? Would you say never, once in a while, fairly often or very often?

NEVER	1
ONCE IN A WHILE	2
FAIRLY OFTEN	3
VERY OFTEN	4
REFUSED	-7
DON'T KNOW	-8

DM-19. In general, how do your finances usually work out at the end of the month? Do you find that you usually end up with some money left over, just enough to make ends meet, or not enough money to make ends meet?

SOME MONEY LEFT OVER	1
JUST ENOUGH TO MAKE ENDS MEET	2
NOT ENOUGH TO MAKE ENDS MEET	3
REFUSED	-7
DON'T KNOW	-8

DM-20. Have <u>you</u> ever done any work for pay?

YES	1	
NO	2	(DMINTROC)
REFUSED	-7	(DMINTROC)
DON'T KNOW	-8	(DMINTROC)

DM-21. When was the last time you worked for pay?

_____/_____
MONTH YEAR

DMINTROC. Next, I have a few questions about your health insurance.

DMINTROD. Medicare is the Social Security health insurance program for people 65 years old or over. People covered by Medicare have a card that looks like this. Many people also have other coverage for health care.

[HAND SHOW CARD N TO RESPONDENT.]

DM-22. Are you covered by Maryland's Medical Assistance (MEDICAID) program? People with Medical Assistance usually have a card that looks like this.

[HAND SHOW CARD O TO RESPONDENT.]

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

DM-23. Are you covered by any other public assistance program that pays for medical care?

YES	1	
NO	2	(DM-25)
REFUSED	-7	(DM-25)
DON'T KNOW	-8	(DM-25)

DM-24. What is the name of that program?

_____

DM-25. Not counting Medicare, Medical Assistance or the programs I just asked about, do you have any other health insurance or medical insurance that pays hospital or doctor bills?

YES	1	
NO	2	(DM-27)
REFUSED	-7	(DM-27)
DON'T KNOW	-8	(DM-27)

DM-26. Is that...

Maryland Blue Cross/Blue Shield, or	1
Something else (SPECIFY)?	91
REFUSED	-7
DON'T KNOW	-8

DM-27. Not counting Medicare or Medical Assistance, do you have any health insurance plan or medical insurance that pays for prescription medicines?

YES	1
NO	2
REFUSED	-7
DON'T KNOW	-8

SECTION CO: CONTACT AND PROXY INFORMATION

CO1. Next, I would like to verify your address. I have it listed as... [READ ADDRESS LISTED BELOW.] Is this correct?

YES	1	(CO3)
NO	2	(CO2)

CO2. What is your correct address?

[PRESS ENTER FOR FIELDS WITH NO CORRECTIONS.]

CO2A. What is your telephone number?

[ENTER "999" IN AREA CODE IF PERSON DOES NOT HAVE A PHONE.]

CO3. We will be contacting you in about 6 months to see how you are doing. In order to help us do that I would like the name of someone who could answer questions about your health if you were not available to do so. Please give me the name of someone in this area who would know the most about your health and health care.

PROXY NAME GIVEN	1	(CO4)
PROXY NAME NOT GIVEN	2	(CO6)
REFUSED	-7	(CO6)
DON'T KNOW	-8	(CO6)

CO4. Who is this person?

[ENTER ONLY ONE PERSON.]

BOX CO1: IF PERSON SELECTED OR ADDED AT CO4 IS A HOUSEHOLD MEMBER (PERS.PERSLIVE = 1), THEN COPY THE PARTICIPANT'S ADDRESS TO THE PROXY'S ADDRESS FIELDS, THEN GO TO CO6. OTHERWISE, GO TO CO5.

CO5. What is (CO4 PERSON NAME)'s address and phone number?

[ENTER "999" IN AREA CODE IF PERSON DOES NOT HAVE A PHONE.]

CO6. I would also like the name, address, and telephone number of two relatives or close friends who would know where to reach you in case we have trouble getting in touch with you. Please give me the name of someone who is not living with you.

CONTACT NAME GIVEN	1	(CO7)
CONTACT NAME NOT GIVEN	2	(CO12)
REFUSED	-7	(CO12)
DON'T KNOW	-8	(CO12)

CO7. (Please give me the name of a relative or close friend, not living with you, who would know where you would be.)

[ENTER ONLY ONE CONTACT.]

CO8. Please give me an address and phone number for contacting (CO7 PERSON NAME).

[ENTER "999" IN AREA CODE IF PERSON DOES NOT HAVE A PHONE.]

CO9. Please give me another name, address, and telephone number of a relative or close friend who would know where to reach you in case we have trouble getting in touch with you. Again, please give me the name of someone who is not living with you.

CONTACT NAME GIVEN	1	(CO10)
CONTACT NAME NOT GIVEN	2	(CO12)
REFUSED	-7	(CO12)
DON'T KNOW	-8	(CO12)

CO10. (Please give me the name of a relative or close friend, not living with you, who would know where you would be.)

[ENTER ONLY ONE CONTACT.]

CO11. Please give me an address and phone number for contacting (CO10 PERSON NAME).

[ENTER "999" IN AREA CODE IF PERSON DOES NOT HAVE A PHONE.]

CO12. That's all the questions that I have. Before I leave I would like to make an appointment with you for the nurse who will be conducting the physical examination in your home. I would like to remind you that the examination is absolutely free, and that you will receive $15 for participating. What times would be convenient for you? [RECORD ON RECORD OF CALLS. CALL 532-2250. OBTAIN APPOINTMENT TIME. COMPLETE APPOINTMENT FORM.]

Thank you very much for your time. Here is your $15 for completing this interview. Please sign this form indicating that you have received the $15.

CO12a. Let's stop here for today. But, before I leave, I want to make an appointment with you to complete this interview. Would (DATE and TIME) be convenient for you?
Thank you. I'll see you next (DATE and TIME scheduled).

BOX CO4: IF MINI-MENTAL TOTAL SCORE IS 24 OR MORE AND BASE.PTAGE = 70 - 79, THEN GO TO CO12b. OTHERWISE, GO TO CO13.

CO12b. You have been selected to participate in our study. You represent thousands of women and the information which you give us will help the National Institutes of Health and Johns Hopkins University learn about the health conditions and needs of women like yourself. Therefore, your participation is very important.

Before we proceed further, I would like you to sign this consent form which will confirm that you have agreed to go to the Johns Hopkins Functional Status Laboratory for an interview and physical examination and that you give us permission to examine your medical records. Please take a moment to read the form.

[READ WHAS II CONSENT FORM ALOUD.]

CO12c. Before I leave I would like to make an appointment for you to go to the Johns Hopkins Functional Status Laboratory for an interview and a free evaluation of some aspects of your health as well as your ability to perform daily activities. We will help make this visit as convenient as possible by providing transportation and lunch for you.

[COMPLETE WHAS II RECRUITMENT FORM.]

C013. Those are all the questions that I have today. Based on your answers to these questions, we now have all of the data that we need. Thank you for your participation in this important study. Please remember that everything you have told me today will be kept in confidence.

BOX C06: IF MRND.MRNDRSLT = 51 AND HEHA.GENHELTH = 1, 2, OR 3, AND HRND.SCRMYOCR, SCRANGNA, SCRCHF, SCRHBP, SCRHRTDS, SCRDIABS, SCRARTHS, SCRSTROK, SCRCANCR, SCRFXHIP, SCRPRKNS, AND DTLNGDS = 2, -7, OR -8, AND BASE.PTRACE = 2, AND DEMO.PTHIGRAD = 10 - 18, THEN GO TO C014. OTHERWISE, GO TO BOX C07.

C014. [INTERVIEWER: IF THE PARTICIPANT HAS NO SEVERE HEARING OR VISUAL IMPAIRMENT, SHE MAY BE ELIGIBLE FOR PARTICIPATION IN THE BALTIMORE LONGITUDINAL STUDY ON AGING. IF SHE HAS NO SEVERE HEARING OR VISUAL IMPAIRMENT, READ THE FOLLOWING. OTHERWISE, PRESS ENTER TO CONTINUE.]

While you are not eligible for our study, you may be eligible for the Baltimore Longitudinal Study on Aging. If you are interested in finding out more about that study, I can give you some information.

[INTERVIEWER: IF SHE IS INTERESTED, GIVE HER THE INFORMATION, AND INDICATE THAT YOU DID SO ON THE CALL RECORD.]

BOX C07. CASES CODED INELIGIBLE. GO TO FINSCRM.

SECTION IC: INTERVIEWER COMMENTS

IC1. TYPE OF LIVING QUARTERS:

DETACHED SINGLE-FAMILY HOUSE	1
DETACHED TWO-FOUR FAMILY HOUSE OR APARTMENT	2
SEMI-DETACHED ROW HOUSE, TOWN HOUSE (2 OR MORE UNITS IN A ROW)	3
APARTMENT HOUSE (5 OR MORE UNITS)	4
APARTMENT IN A PARTIALLY COMMERCIAL STRUCTURE	5
TRAILER	6
RETIREMENT COMMUNITY OR APARTMENTS	7
OTHER (SPECIFY)	91
DON'T KNOW	-8

IC2. WAS THE INTERVIEW COMPLETED?

YES, WITH LITTLE OR NO MISSING INFORMATION	1	(IC3)
YES, BUT A CONSIDERABLE AMOUNT OF INFORMATION WAS NOT OBTAINED	2	(IC2a)
NO, TERMINATED	3	(IC2a)
DON'T KNOW	-8	(IC3)

IC2a. INTERVIEWER: EXPLAIN REASONS FOR REFUSALS OR NON-RESPONSE BELOW.

_____

_____

IC3. WAS ANYONE ELSE PRESENT DURING THE INTERVIEW?

YES	1	
NO	2	(IC4)

IC3a. [INTERVIEWER: ENTER THE NAME OF THE PERSON WHO WAS PRESENT DURING THIS INTERVIEW.]

[ENTER ONLY ONE PERSON.]

IC3b. DID THIS OTHER PERSON ANSWER OR ASSIST IN ANSWERING ANY OF THE QUESTIONS?

YES	1	
NO	2	(IC4)
DON'T KNOW	-8	(IC4)

IC3c. HOW WERE QUESTIONS ANSWERED: [USE CODES BELOW.]

aa.	SCREENER	( )
a.	HEALTH HABITS	( )
b.	ARTHRITIS	( )
c.	HEART DISEASE AND DIABETES	( )
d.	DAILY ACTIVITIES	( )
e.	EXERCISE TOLERANCE	( )
f.	LIFE SATISFACTION	( )
g.	PULMONARY	( )
h.	NEUROLOGIC	( )
i.	CANCER	( )
j.	ACTIVITIES	( )
k.	GDS	( )
l.	BALANCE/FALLS	( )
m.	SEEING AND HEARING	( )
n.	DEMOGRAPHICS	( )
o.	CONTACT AND PROXY INFORMATION	( )

RESPONDENT ONLY	1
RESPONDENT AND OTHER PERSON	2
OTHER PERSON ONLY	3

IC3d. IN YOUR JUDGMENT, DID THE OTHER PERSON HELP OR HINDER THE INTERVIEW. DESCRIBE BELOW.

_____

_____

IC4. OBSERVED PHYSICAL DIFFICULTIES: [CODE ALL THAT APPLY.]

0	NO PHYSICAL DIFFICULTIES OBSERVED.....	( )
1	HEARING IMPAIRMENT.....	( )
2	VISUAL IMPAIRMENT.....	( )
3	WHEELCHAIR.....	( )
4	USE CANE, CRUTCHES, WALKER.....	( )
5	WALKING DIFFICULTIES.....	( )
6	CRIPPLED HANDS OR LEGS.....	( )
7	COUGHS CONTINUALLY.....	( )
8	SHORTNESS OF BREATH.....	( )
9	SKIN PROBLEMS.....	( )
10	SPEECH PROBLEMS - NOT LANGUAGE.....	( )
91	OTHER PHYSICAL PROBLEMS (SPECIFY).....	( )

IC5. LANGUAGE

NO PROBLEM DURING INTERVIEW.....	1	(END)
SOME DIFFICULTY.....	2	
GREAT DIFFICULTY DURING INTERVIEW.....	3	
DON'T KNOW.....	-8	

IC5a. WHAT LANGUAGE DOES R SPEAK?

ENGLISH.....	1
SPANISH.....	2
OTHER (SPECIFY).....	91

CARD GREEN

ARTHRITIS OR JOINT PAIN OF HANDS, ARMS OR SHOULDERS	1
ARTHRITIS OR JOINT PAIN OF HIPS, KNEES OR FEET	2
BACK PAIN	3
BALANCE PROBLEMS/UNSTEADINESS ON FEET	4
CANCER	5
DIABETES	6
EMOTIONAL OR PSYCHOLOGICAL PROBLEMS	7
HEARING PROBLEMS	8
HEART DISEASE (CHEST PAIN, CONGESTIVE HEART FAILURE, ETC)	9
HIGH BLOOD PRESSURE	10
HIP FRACTURE	11
INJURY	12
LUNG DISEASE (EMPHYSEMA, ASTHMA, CHRONIC BRONCHITIS, ETC)	13
MEMORY PROBLEMS OR CONFUSION	14
PARKINSON'S DISEASE	15
POOR CIRCULATION IN LEGS	16
STROKE	17
VISION PROBLEMS	18
WEAKNESS/NO SPECIFIC DISEASE	19
OLD AGE (PROBE)	20
SOME OTHER PROBLEM OR CONDITION (SPECIFY)	91

CARD PINK

Less than 3 months ago,	1
3 to 6 months ago,	2
6 months to 1 year ago,	3
1 to 3 years ago,	4
3 to 5 years ago,	5
5 to 10 years ago,	6
10 to 15 years ago,	7
15 to 20 years ago, or	8
More than 20 years ago?	9
REFUSED	-7
DON'T KNOW	-8

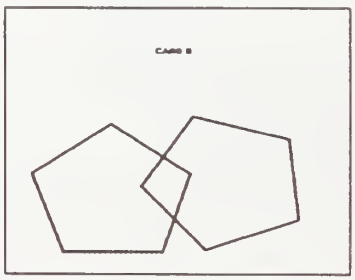
CARD BLUE

A little difficulty,	1
Some difficulty,	2
A lot of difficulty, or	3
Are you unable to do it?	4
REFUSED	-7
DON'T KNOW	-8

CARD A

CLOSE YOUR EYES

CARD B



CARD C

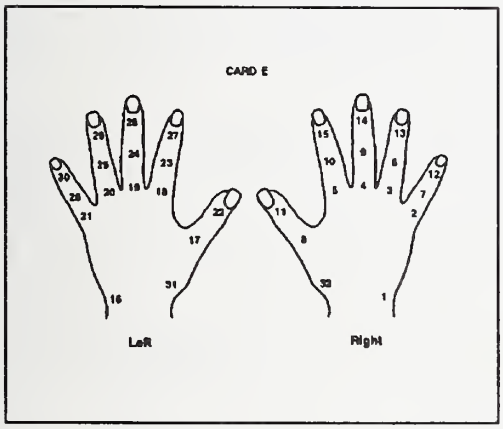
A.	Less then $3,000	1
B.	$3,000 - 5,999	2
C.	$6,000 - 7,999	3
D.	$8,000 - 9,999	4
E.	$10,000 - 14,999	5
F.	$15,000 - 24,999	6
G.	$25,000 - 34,999	7
H.	$35,000 - 49,999	8
I.	$50,000 or more	9

CARD D

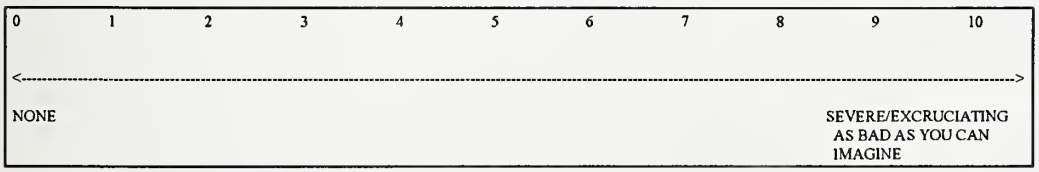
OVER-THE-COUNTER MEDICATIONS

Aspirin	Cold medicine
Tylenol	Cough medicine
Bufferin	Sleep medicine
Anacin	Antacids
Headache pills	Stomach medicine
Pain killers	Vitamins
Laxatives	Ointments or salves
Bowel medicine	Eye Drops
	Any other medicine from the drug store

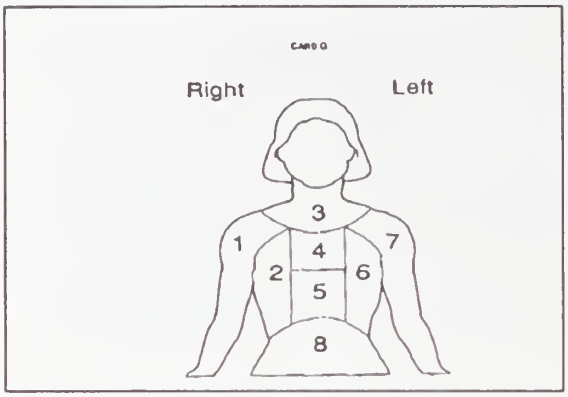
CARD E



CARD F



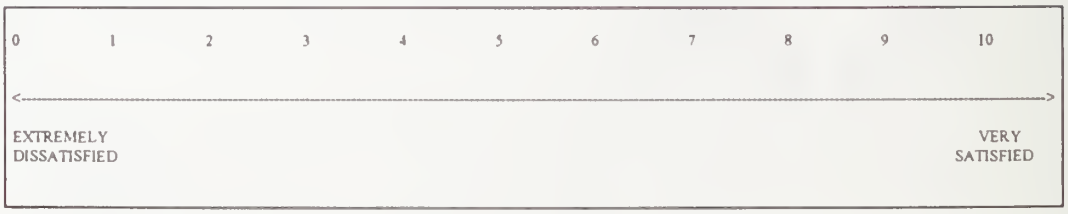
CARD G



CARD H

MORE THAN ONCE A DAY	1
ONCE A DAY	2
4-6 TIMES A WEEK	3
2 OR 3 TIMES A WEEK	4
ABOUT ONCE A WEEK	5
LESS THAN ONCE A WEEK	6
REFUSED	-7
DON'T KNOW	-8

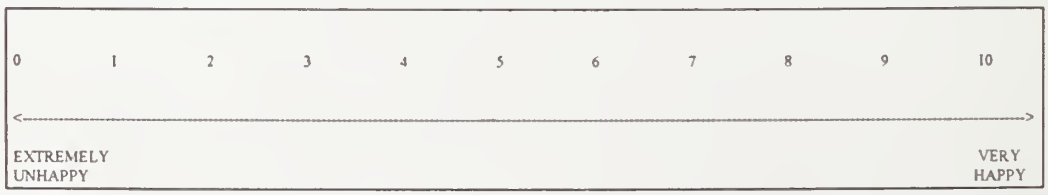
CARD I



CARD I_1

VERY DISSATISFIED	=	0
SOMEWHAT DISSATISFIED	=	1 OR 2
A LITTLE DISSATISFIED	=	3 OR 4
NEITHER SATISFIED OR DISSATISFIED	=	5
A LITTLE SATISFIED	=	6 OR 7
SOMEWHAT SATISFIED	=	8 OR 9
VERY SATISFIED	=	10

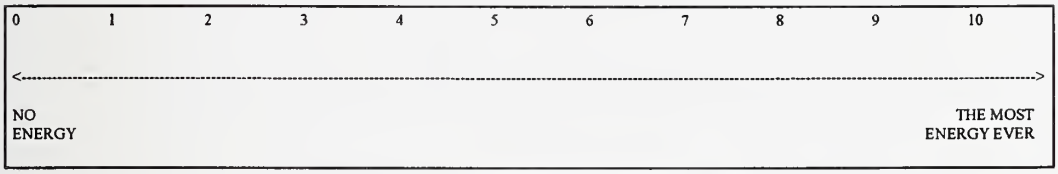
CARD J



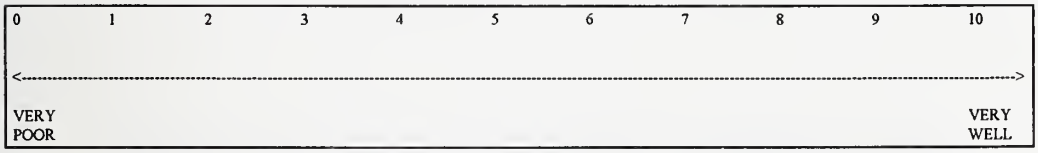
CARD J_1

VERY UNHAPPY	=	0
SOMEWHAT UNHAPPY	=	1 OR 2
A LITTLE UNHAPPY	=	3 OR 4
NEITHER HAPPY OR UNHAPPY	=	5
A LITTLE HAPPY	=	6 OR 7
SOMEWHAT HAPPY	=	8 OR 9
VERY HAPPY	=	10

CARD K



CARD L



CARD M

ALWAYS
VERY OFTEN
OFTEN
SOMETIMES
NEVER

CARD N

SAMPLE MEDICARE CARD

CARD O

SAMPLE MEDICAID CARD

Appendix C

Interviewer's Physical Assessment

OMB No.: 0925-0376
Expires: July 31, 1995

RESPONDENT ID: _____

WOMEN'S HEALTH AND AGING STUDY

PHYSICAL ASSESSMENT FORM

DATE: _____

TIME BEGAN: |__|__| : |__|__| AM..... 1 PM..... 2

TIME ENDED: |__|__| : |__|__| AM..... 1 PM..... 2

INTERVIEWER: _____

INTRODUCTION:

Next, I am going to ask you to do some tasks, some of which might be very easy and others difficult for you to do. If you feel that you cannot do any task, just say so and we will go on to the next one.

TASK 1: VISUAL ACUITY

Equipment: Goodlite Portable Eye Chart.

Description: The participant is asked to read the letters on the chart, starting at the top. Correct and incorrect letters are marked on a standardized score sheet.

Instructions:

1. Make sure the participant is wearing glasses if she uses them to view things at a distance. If the participant wears bifocals or trifocals, instruct her to look through the portion used for viewing distant objects. Be sure she is not wearing outside glasses, such as sunglasses.
2. Place the eye chart on a table or other level surface within easy reach of an AC receptacle.
3. Seat the participant 10 feet from the chart.
4. Turn the chart illuminator on and turn off the room lights. Light from other sources such as windows should be minimized.
5. Tell the participant to read the letters on the chart with both eyes open, starting at the top.
6. If any errors are made on the top row, move the participant to 5 feet from the chart and begin again. If any errors are made on the top row at 5 feet, move the participant to 2½ feet from the chart and begin again. Continue at 2½ feet even if the participant makes an error on the first row.
7. The participant should continue to read the letters until the maximum allowable number of missed letters is met for a line.
8. You may focus the participant on the correct line by pointing to the line she is to read. You may not point to individual letters to help her focus.
9. If the participant is unable to see a letter, ask her to give her best guess.
10. Circle correct letters and place a line through incorrect letters on the score sheet. Then calculate the total score by adding up all correct answers. Refer to scoring key to see if an alert is indicated.

Scoring Key:

ALERT SCORES

Subtotal less than 50 at 10 ft.

Subtotal less than 80 at 5 ft.

Any subtotal at 2.5 ft.

If an "Alert Score" is calculated, go to the back cover for instructions on how to proceed with this alert.

ROW NO.	NUMBER CORRECT IN ROW									
	1	2	3	4	5	6	7	8	9	10
1	2.5	5	7.5	10						
2	2	4	6	8	10					
3	1.4	2.9	4.3	5.7	7.1	8.6	10			
4	1.3	2.5	3.8	5	6.3	7.5	8.8	10		
5	1.3	2.5	3.8	5	6.3	7.5	8.8	10		
6	1	2	3	4	5	6	7	8	9	10
7	1	2	3	4	5	6	7	8	9	10
8	1	2	3	4	5	6	7	8	9	10
9	1	2	3	4	5	6	7	8	9	10

TASK 1: VISUAL ACUITY

SCRIPT

1. Do you wear glasses to see distant objects? IF YES: Please put them on. (IF BIFOCALS: Please look through the part of your glasses that you use to see distant objects.)

2. Please read the letters on this chart, starting with the top row. (MOVE TO 5 FEET IF ERROR ON TOP ROW)

3. IF PARTICIPANT SAYS SHE CANNOT SEE A LETTER, SAY: Just give me your best guess.

SCORING

1. PARTICIPANT WEARS:

GLASSES	1
BIFOCALS OR TRIFOCALS	2
CONTACT LENSES	3
NO VISUAL AIDS	4

2. HOW FAR WAS PARTICIPANT FROM EYE CHART?

10 FEET	1
5 FEET	2
2½ FEET	3

3. CIRCLE CORRECT LETTERS AND PLACE A LINE THROUGH INCORRECT LETTERS. WHEN THE ALLOWABLE NUMBER OF MISSED LETTERS IS MET FOR A LINE, STOP THE TEST.

MAXIMUM NUMBER OF MISSED LETTERS ALLOWED	1	2	3	4	5	6	7	8	9	10	ROW	SCORE
4	K	H	O	R	.....						1	_____
5	C	K	Z	D	V	.....					2	_____
6	O	Z	N	R	H	V	C	.....			3	_____
6	R	K	C	S	Z	H	V	D	.....		4	_____
6	S	D	K	H	O	R	C	V	.....		5	_____
7	H	O	C	Z	R	K	D	S	V	N	6	_____
7	N	Z	C	O	S	K	D	V	R	H	7	_____
7	D	C	S	K	O	V	R	N	H	Z	8	_____
7	Z	S	V	D	K	H	N	O	R	C	9	_____

TOTAL SCORE = _____

4. TEST NOT DONE 1

EXPLAIN _____

_____

TASK 2: LOCK AND KEY

Equipment: Lock mounted in a wooden block and key.
Stop watch

Description: The interviewer will record whether the participant can pick up and hold the key in order to open the lock. The interviewer will then time how long it takes the participant to open the lock. The participant has a total of 1 minute to complete the task.

Instructions:

1. Make sure participant is wearing glasses if she uses them for reading.
2. Demonstrate procedures.
3. Place board on rubber mat. Place the key in front of the board on the mat on the same side as the hand which she says she uses.
4. You should hold the board firmly. If she likes, the participant can also use her other hand to hold the board.
5. The starting position should be with the preferred hand by her side, not on the table or on her lap. The deadbolt should be on the participant's right.
6. Begin timing as the participant's hand begins to move toward the key.
7. Give the participant 30 seconds to pick up the key. If she has not picked up the key, terminate the task and thank her for trying.
8. If the participant drops the key after picking it up or cannot maneuver the key to a position where she can open the lock without using the other hand, terminate the task and thank her for trying. Do not repeat the test.
9. If the participant cannot open the lock within one minute, terminate the task and thank the subject.
10. End timing when deadbolt appears or at the end of one minute, whichever comes first.

TASK 2: LOCK AND KEY

SCRIPT

1. Now I will ask you to pick up a key and open a lock.

2. Do you normally wear glasses for reading? IF PARTICIPANT DOES, HAVE HER PUT THEM ON.

3. Please show me the hand you would normally use to pick up a key and open a lock. You may use your other hand to steady the block, but not to hold the key or help you turn the lock. Let me demonstrate the procedure.

4. Although I will be timing you I would like you to move carefully and smoothly, trying not to drop the key.

5. Do you have any questions? When I say "ready, begin" you may begin.

6. Ready, begin.

SCORING

1. IS RESPONDENT ABLE TO PICK UP KEY (WITHIN 30 SECONDS)?

YES	1	
NO	2	(TASK 3)
NOT ATTEMPTED (EXPLAIN)	9	(TASK 3)

_____

_____

2. IS RESPONDENT ABLE TO PUT KEY IN LOCK?

YES	1	
NO	2	(TASK 3)
NOT ATTEMPTED (EXPLAIN)	9	(TASK 3)

_____

_____

3. IS RESPONDENT ABLE TO OPEN THE LOCK?

YES	1	
NO	2	(TASK 3)
NOT ATTEMPTED (EXPLAIN)	9	(TASK 3)

_____

_____

4. TIME TO COMPLETE TASK: ___ ___ . ___ SECONDS

TASK 3: PUTTING BLOUSE ON

Equipment: Three women's blouses, sizes medium (12), large (18) and extra-large (22).
Stop watch

Description: The participant will be given a blouse and asked to put it on and button it.

Instructions:

1. Determine the correct size of blouse. If the participant is too large to wear the largest blouse, do not attempt this task. Score a "9" and explain.

2. Ask the participant to stand up and remove any bulky sweater or jacket. If the participant cannot stand, have her put the blouse on while sitting. Ask her to move to the edge of the chair if possible.

3. Ask her to put on the blouse over her clothes and button it except for the top collar button.

4. Hand the unbuttoned blouse to the participant and begin timing when she takes the blouse.

5. Stop timing when the blouse is buttoned or after four minutes, whichever comes first.

6. If the blouse is buttoned unevenly, ask the participant to take the blouse off and begin again. If the blouse is still buttoned incorrectly after the second attempt, terminate the task.

7. The participant may not stand in front of a mirror to put the blouse on.

TASK 3: PUTTING BLOUSE ON

SCRIPT

1. Next, I would like you to stand up and put a blouse on and button it. You may put it on over your clothes (but please remove your sweater/jacket).

2. (I have a small, medium, and large blouse. Which one should we use?)

3. When I hand you this blouse, please put it on as you normally would when you are dressing, and button all buttons except the top (collar) one.

4. Please tell me when you are done.

5. IF BUTTONED INCORRECTLY: Please take the blouse off and begin again.

SCORING

1. IS RESPONDENT ABLE TO PUT ON BLOUSE? THE BLOUSE IS CONSIDERED ON IF BOTH ARMS ARE IN THE APPROPRIATE SLEEVES AND THE COLLAR IS UP AROUND THE RESPONDENT'S NECK (NOT ACROSS HER BACK).

YES	1	
NO	2	(4)
NOT ATTEMPTED (EXPLAIN)	9	(TASK 4)

2. IS RESPONDENT ABLE TO BUTTON SHIRT?

YES, ON THE FIRST ATTEMPT	1	
YES, ON SECOND ATTEMPT	2	
SHIRT BUTTONED, BUT INCORRECTLY (I.E.: A BUTTON IS UNBUTTONED OR BUTTONED UNEVENLY	3	
NO	4	(4)
NOT ATTEMPTED (EXPLAIN)	9	(4)

3. TIME TO COMPLETE TASK (STOP AFTER FOUR MINUTES):

_____ MINUTES ___ ___ . ___ SECONDS

4. WAS THE PARTICIPANT...

STANDING OR	1
SITTING	2

TASK 4: HEIGHT

Equipment: Stadiometer

Description: The participant's height will be measured standing against a doorway.

Instructions:

1. The floor should be hard, even, flat, and uncarpeted.
2. Respondent should remove shoes, but keep socks on. She should also remove any heavy jewelry or clothing.
3. Place the tape at the estimated height.
4. Ask the participant to stand against the doorway wall with her feet flat on the floor, her feet together, and with her heels, hips, and shoulders directly against the door/wall. Position her head using a Frankfort plane.
5. Stand to the left of the participant and, with your right hand, place the stadiometer against the wall and on the participant's head.
6. Ask the participant to move away from the wall.
7. Place a mark on the tape at the level of the stadiometer.
8. Hold the stadiometer against the wall and pull the tape down to the floor with the plastic piece touching the wall.
9. Read tape from bottom of blue line.

TASK 4: HEIGHT

SCRIPT

1. Now, I would like to get your height.

2. Please slip off your shoes (and remove your jacket, etc).

3. Now, stand back against this doorway with your feet flat on the floor, and with your heels, hips, and shoulders directly against the wall.

4. Please look straight ahead.

5. Now, please step aside so that I can measure your height.

SCORING

1. ___ ___ ___.___ CENTIMETERS

2. TASK WAS:

COMPLETED	1
ATTEMPTED BUT NOT COMPLETED (EXPLAIN)	2
NOT ATTEMPTED (EXPLAIN)	9

TASK 5: WEIGHT

Equipment: Scale

Description: The Respondent's weight is measured in kilograms using a bathroom-type digital scale.

Instructions:

1. Check to make sure the switch on the bottom of the scale is turned to "kg." Place the scale on a level, flat floor surface preferable without a rug. Avoid shag or plush carpeting. Set the scale so that the participant will stand facing and within an arm's length of a wall. Participants will automatically use the wall to balance themselves as they get on and off the scale.

2. The participant should be in stocking feet or barefoot, and wearing light indoor clothing with pockets emptied (no coats, sweaters, shoes, heavy jewelry, keys, etc.)

3. Push the red ON button on the front of the scale and wait for the "0.0" to appear. DO NOT put any weight (yours or the participant's) on the scale until the "0.0" appears.

4. Stand beside the participant while she mounts the scale and assist as needed. If the "0.0" goes out before she is on the scale, try again. Ask the participant to step off the scale and mount the scale again when the "0.0"s are displayed.

5. Read the scale after about 5 seconds. If it moves between 2 numbers, take the lower weight.

6. Assist the participant in getting off the scale.

TASK 5: WEIGHT

SCRIPT

1. Now, lets get your weight.

2. Please step on the scale when the two zeros appear.

SCORING

1. ___ ___ ___ . ___ KILOGRAMS

2. TASK WAS:

COMPLETED	1
ATTEMPTED BUT NOT COMPLETED (EXPLAIN)	2
NOT ATTEMPTED (EXPLAIN)	9

TASK 6: FUNCTIONAL REACH

Equipment: 152 centimeter paper tape
post-its
masking tape

Description: The participant stands next to a wall. She raises her right arm in front of her and the interviewer marks the position of her right knuckle. She then reaches as far forward as she can without taking a step or falling. Three attempts are measured.

Instructions:

1. For frail individuals who are unable to stand unsupported by another person for 30 seconds, or who use an assistive device, do not perform this test.

2. Tape a disposable tape measure to the wall at the acromion height. Make sure the tape measure is level.

3. Demonstrate the maneuver and ask the participant if she feels that it would be safe for her to attempt it.

4. Have the participant stand with the right acromion next to the tape. Ask her to place her feet in a normal, relaxed stance, with hands held at her sides. Ask her to maintain that position for the rest of the task.

5. Ask the participant to make a fist of the right hand and extend the right arm forward horizontally (approximately 90 degrees). Mark with a post-it the distal end of the right third metacarpal.

6. Ask the participant to reach as far forward as she can without losing her balance or taking a step.

7. The upper body should not be allowed to contact the wall during this maneuver.

8. No attempt need be made to control the participant's method of reaching. However, guard the participant, in case of loss of balance, to prevent her from falling.

9. Record the placement of the right third metacarpal on the tape measure.

10. Repeat steps 5 & 6 two more times, for a total of three measurements.

11. If the participant touches the wall or takes a step during testing, the trial should be repeated.

TASK 6: FUNCTIONAL REACH

SCRIPT

1. Now, let's move on to a more active part of the exam. I would now like you to try to move your body in different movements. I will first describe and show each movement to you. Then I'd like you to try to do it. If you cannot do a particular movement, or if you feel it would be unsafe to try to do it, tell me and we'll move on to the next one. Let me emphasize that I do not want you to try to do any exercise you feel might be unsafe.

2. Stand here with your right shoulder next to the wall.

3. Now, let me attach this paper tape to your wall.

4. Now I would like to demonstrate the maneuver that I am going to ask you to do. DEMONSTRATE. Do you feel that it would be safe for you to lean forward like that as far as you can without losing your balance? IF NO, SCORE BELOW AND GO TO NEXT TASK.

5. Please stand here again. You should place your feet in a normal, relaxed stance, with hands held at your side. Please maintain this position for the rest of this task.

6. Now, make a fist with your right hand and extend your arm forward along the tape.

7. When I ask you to, please reach as far forward as you can without losing your balance or taking a step. Your arm and body should not touch the wall.

8. OK. Go ahead and reach as far as you can.

9. Now, I would like you to do that again.

10. And one more time.

SCORING

1. POSITION OF THIRD RIGHT METACARPAL:

TRIAL 1: ___ ___ ___ . ___ CENTIMETERS
TRIAL 2: ___ ___ ___ . ___ CENTIMETERS
TRIAL 3: ___ ___ ___ . ___ CENTIMETERS

REACH:

TRIAL 1: ___ ___ ___ . ___ CENTIMETERS
TRIAL 2: ___ ___ ___ . ___ CENTIMETERS
TRIAL 3: ___ ___ ___ . ___ CENTIMETERS

2. TASK WAS:

COMPLETED	1
ATTEMPTED BUT NOT COMPLETED (EXPLAIN) _____	2
NOT ATTEMPTED (EXPLAIN) _____	9

TASK 7: TELEPHONE USE

Equipment: Page from phone book
Telephone
Stop watch

Description: Respondent looks up a telephone number and dials it.

Instructions:

1. Ask participant if she usually uses a magnifier to read the telephone book. If she does, ask her to use it.

2. Give participant the page from the telephone book. Ask participant to look up the Morning Star Cleaners (559-7411). Give her a piece of paper to write it on. Start timing when you hand her the page.

3. If the participant cannot find the number, prompt her.

4. If she still cannot find the number, give it to her on a piece of paper.

5. Now ask her to dial the number. You should be positioned so that you can see what she dials.

6. If she cannot dial the number, place her finger on the first number.

7. If she still cannot dial the number, terminate the task.

8. Ask her if she usually uses a push-button telephone or a rotary telephone.

9. Record time for entire task, including prompting. Start when participant starts looking at phone book.

TASK 7: TELEPHONE USE

SCRIPT

1. Next, I am going to ask you to look up a telephone number and dial it on this telephone.

2. Do you use a magnifier to read the telephone book? Use this page from the telephone book to find the number of the Morning Star Cleaners. You can write the number here. HAND HER A PIECE OF PAPER.

3. IF PARTICIPANT CANNOT FIND NUMBER, PROMPT:
Look in the second column about 3/4 of the page down.

4. IF SHE STILL CANNOT FIND NUMBER: That's fine. The number is 559-7411. WRITE NUMBER ON PAD.

5. Now, please dial the number. IF YOU CANNOT OBSERVE, ASK: Please tell me what you are dialing. (CORRECT NUMBER IS 559-7411)

6. IF SHE CANNOT DIAL: Let me show you where the first number is. PLACE HER FINGER ON THE FIRST NUMBER.

7. IF SHE STILL CANNOT DIAL: That's fine. Let's go on to the next task.

8. Do you usually use a push button telephone, like this one, or a rotary telephone? RECORD BELOW.

SCORING

1. FINDING THE TELEPHONE NUMBER:

FOUND CORRECT NUMBER WITHOUT PROMPTING	1
FOUND CORRECT NUMBER WITH PROMPTING	2
FOUND CORRECT NUMBER WITH MAGNIFIER	3
FOUND NUMBER BUT INCORRECT	4
UNABLE TO UNDERSTAND DIRECTIONS AND HOW TO USE PHONE BOOK	5
UNABLE TO READ PRINT OF PHONE BOOK	6
NO NUMBER FOUND, REASON UNKNOWN	0
DID NOT ATTEMPT (EXPLAIN)	9

2. DIALING TELEPHONE NUMBER

DIALED NUMBER CORRECTLY WITHOUT PROMPTING	1	
DIALED NUMBER CORRECTLY WITH PROMPTING	2	
DIALED NUMBER INCORRECTLY	3	
UNABLE TO UNDERSTAND DIRECTIONS AND HOW TO USE PHONE	4	(4)
UNABLE TO DIAL NUMBER DUE TO INABILITY TO USE HANDS	5	(4)
DID NOT ATTEMPT (EXPLAIN)	9	(4)

3. TIME TO COMPLETE TASK:

___ ___ MINUTES ___ ___.___ SECONDS

4. USUALLY USES:

PUSH BUTTON TELEPHONE	1
ROTARY DIAL TELEPHONE	2

TASK 8: BLOCK CONSTRUCTION

Equipment:
Colored blocks
Set 1: 4 purple and 1 yellow
Set 2: 5 red, 3 green and 1 yellow
2 design cards
Stop watch

Description: Participant attempts to construct the blocks like the designs on the cards, beginning with the simple card. She goes on to the more complicated design, if she completes the simpler design correctly.

Instructions:

1. Place all of the blocks for both designs mixed together in front of the participant.
2. Ask her to make the simple design, using the correct colors.
3. Start timing when you show her the card.
4. If the participant does not complete the design correctly, go on to the next task.
5. If participant does complete the first design correctly, mix all of the blocks up again, and then show her the more complicated design.
6. Again, start timing when you show her the card.
7. Stop timing when the participant stops trying to complete the design.

TASK 8: BLOCK CONSTRUCTION

SCRIPT

1. I have here a picture of a design. I would like you to make this same design with the blocks in front of you, using the same colors.

2. Ready, begin.

3. IF FIRST COMPLETED CORRECTLY: Now please make this design.

SCORING

1. SIMPLE BLOCK DESIGN

   A. TASK WAS:

COMPLETED WITH BLOCKS AND COLOR CORRECT	1	
COMPLETED WITH BLOCKS OR COLOR INCORRECT	2	
UNABLE TO COMPLETE TASK	3	(TASK 9)
NOT ATTEMPTED (EXPLAIN)	4	(TASK 9)

   B. TIME TO COMPLETE TASK: ___ ___ MINUTES ___ ___ . ___ SECONDS

> IF 1A = 2, GO TO TASK 9.
> IF 1A = 1, CONTINUE.

2. COMPLEX BLOCK DESIGN

   A. TASK WAS:

      1. COMPLETED WITH BLOCK CONSTRUCTION:

CORRECT	1	
INCORRECT WITH HIDDEN BLOCKS PRESENT	2	
INCORRECT WITH HIDDEN BLOCKS MISSING	3	

      2. COMPLETED WITH COLORS

CORRECT	1	
INCORRECT	2	

3.	UNABLE TO COMPLETE TASK	8	(TASK 9)
4.	NOT ATTEMPTED (EXPLAIN)	9	(TASK 9)

   B. TIME TO COMPLETE TASK: ___ ___ MINUTES ___ ___ . ___ SECONDS

TASK 9: VISUAL MEMORY

Equipment: Card with 8 pictures on it
Stop watch

Description: Participant studies a card with 8 pictures on it for 45 seconds. Then the card is taken away and the participant is asked to tell the interviewer as many of the items as she can remember.

Instructions:

1. Ask the participant to look at the card and tell you what each of the objects is.
2. Ask the participant to study the pictures for 45 seconds.
3. Remove card.
4. Ask participant to tell you as many of the objects as she can remember.
5. Stop task after all eight items are mentioned or after participant has been unable to recall any more objects for 30 seconds.

TASK 9: VISUAL MEMORY

SCRIPT

1. In front of you is a card with 8 pictures on it. I would like you to tell me what each of these objects is.

2. Now, I would like you to look at these pictures for 45 seconds and try to remember as many as you can. It may help you to remember them in order. After 45 seconds, I will take the card away and then ask you to tell me the objects that were on the card.

3. Do you have any questions? OK. Ready, begin.

4. Now, please tell me all of the items that you can remember.

SCORING

1. CHECK OFF ITEMS NAMED BY PARTICIPANT:

WATCH	☐	CALCULATOR	☐
IRON	☐	TOASTER	☐
UMBRELLA	☐	RADIO	☐
LAMP	☐	CHAIR	☐

2. TOTAL NUMBER OF ITEMS RECALLED CORRECTLY: _____

3. TASK WAS:

COMPLETED	1
ATTEMPTED BUT NOT COMPLETED (EXPLAIN)	2
_____	
NOT ATTEMPTED (EXPLAIN)	9
_____	

TIME ENDED: |__|__| : |__|__| AM.....1 PM.....2

VISUAL ACUITY ALERTS

IF SCORE IS: LESS THAN 50 AT 10 FEET; OR
LESS THAN 80 AT 5 FEET; OR
ANY TOTAL AT 2.5 FEET

THEN ASK:

1. Have you noticed any recent changes in your vision such as pain around the eyes, blind spots, distortion, blurry vision or haloes around objects, new floaters or flashing lights?

   YES ..... ☐ GO TO 2
   NO ..... ☐ STANDARD ALERT - GO TO 3

2. When did you first notice these symptoms? Did you first notice them . . .

   Within the past few days, ... ☐ EMERGENCY ALERT - GO TO 5
   Within the past few weeks, or ..... ☐ URGENT ALERT - GO TO 4
   More than a few weeks ago? ..... ☐ STANDARD ALERT - GO TO 3

3. STANDARD ALERT. I would advise you to have your eyes checked by a qualified eye care professional in the near future. CONTINUE WITH THE PHYSICAL ASSESSMENT.

4. URGENT ALERT. I urge you to have your eyes checked by a qualified eye care professional within the next few days. CHECK THE FIRST BOX ON THE VISUAL ACUITY REPORT. THEN GO TO 6.

5. EMERGENCY ALERT. I urge you to have your eyes checked by a qualified eye care professional today or tomorrow. CHECK THE SECOND BOX ON THE VISUAL ACUITY REPORT. THEN GO TO 6.

6. IF EMERGENCY OR URGENT ALERT GIVEN, DETERMINE PARTICIPANT'S VISUAL ACUITY USING CHART BELOW. RECORD ON VISUAL ACUITY REPORT. THEN CONTINUE WITH PHYSICAL ASSESSMENT. AT END OF INTERVIEW, COMPLETE VISUAL ACUITY REPORT AND HAND ONE COPY TO THE PARTICIPANT.

Acuity Score Sheet

SCORE	10 FT	5 FT	2.5 FT
0	20/126	20/250	> 20/500
5	20/112	20/225	20/450
10	20/100	20/200	20/400
15	20/90	20/180	20/355
20	20/80	20/160	20/315
25	20/70	20/140	20/285
30	20/64	20/125	20/250
35	20/56	20/110	20/225
40	20/50	20/100	20/200
45	20/44	20/90	20/180
50	20/40	20/80	20/160
55	20/36	20/70	20/140
60	20/32	20/65	20/125
65	20/28	20/55	20/110
70	20/26	20/50	20/100
75	20/22	20/45	20/90
80	20/20	20/40	20/80
85	20/18	20/35	20/70
90	20/16	20/30	20/65

Appendix D

Home Physical Examination

OMB No.: 0925-0376
Expiers: July 31, 1995

July 15, 1993

WOMEN'S HEALTH AND AGING STUDY

HOME PHYSICAL EXAMINATION

CONFIRMATION OF APPOINTMENT:

CALL PARTICIPANT EARLY IN THE EVENING ON THE NIGHT BEFORE THE EXAMINATION IS SCHEDULED.

Hello, Ms. _____, my name is _____ from Westat. I am the nurse who will be coming to examine you as a part of the Women's Health and Aging Study that we are doing for the National Institutes of Health and Johns Hopkins Medical Institutions.

I just wanted to remind you that the examination is scheduled for tomorrow at _____ AM/PM.

CONFIRM ADDRESS AND ASK FOR DIRECTIONS IF NECESSARY.

INTRODUCTION AT THE DOOR:

Hello, Ms. _____, I'm _____ from Westat. (We spoke yesterday on the phone.) I am here to examine you as a part of the Women's Health and Aging Study. Before we begin, I need to find an area in the house where we can conduct the exam.

1. LOOK FOR AN AREA WITH TABLE SPACE AND AN UPRIGHT CHAIR.

2. LOOK FOR A COMFORTABLE CHAIR AND FOOT STOOL FOR THE SEMI-RECUMBENT BLOOD PRESSURE.

3. LOOK FOR A 4.5 METER SPACE FOR THE MEASURED WALKS.

4. MAKE SURE THAT THE PARTICIPANT IS DRESSED APPROPRIATELY; I.E., WEARING THE GOWN LEFT BY THE INTERVIEWER AND CASUAL SHOES - NO SLIPPERS.

5. SET UP YOUR EQUIPMENT USING THE GUIDE ON PAGE 61 OF THIS FORM.

EXCLUSION CRITERIA

	PROCEDURE	EXCLUSION
1.	Mid Upper Arm Circumference/Triceps Skin fold	Cuts and/or rashes
2.	Knee Height	Cannot assume 90° angle of knee
3.	Blood Pressure	Rashes Small gauze/adhesive dressings Casts Withered Arms Puffiness Tubes Open sores/wounds Hematomas
4.	Semi-Recumbent Ankle-Arm Blood Pressure	Rash or skin sores on ankles Participants with venous stasis ulceration or other pathology that precludes placing a BP cuff around the ankle (e.g., open wounds, etc.) Participants with rigid arteries such that an occlusion pressure cannot be reached. Participants with bilateral amputations of legs.
5.	Stands	Unable to stand unaided
6.	Measured Walks	Paralyses Inability to walk
7.	Grip Strength	Acute flare-up of wrist/hand, for example, arthritis or tendonitis
8.	Upper Extremity Strength	$\geq$ 3 months status post upper extremity joint surgery or abdominal or chest surgery
9.	Confrontational Visual Fields	Never had a stroke (except first 50)
10.	Hearing	Discharge from either ear, or pus or blood in either ear.
11.	Spirometry	- Surgery on chest or abdomen past 6 weeks - Hospitalized for heart problem (heart attack, angina, chest pain, congestive heart failure) past 6 weeks - Detached retina or eye surgery past 6 weeks - Hospitalized for respiratory infection such as flu, pneumonia, bronchitis or a severe cold in past 3 weeks
12.	Knee Extensor	Bilateral Paralyses or Casts Lower Extremities Bilateral Hip or AK amputation Bilateral Knee Surgery within 3 months Bedridden participant

13.	Lower Extremity Strength	Unilateral Hip or AK amputation - Perform measurement on the opposite side Bilateral Paralyses Lower Extremities Bilateral Hip or AK Amputation Bilateral hip replacement within 3 months
14.	Somatic Sensation	Never had a stroke (except first 50) Paralyses/Contractures upper extremities - attempt
15.	Purdue Pegboard	Blind Bilateral Upper Extremity Paralyses Bilateral Hand Amputee
16.	Vibration	Bilateral Paralyses lower extremities Bilateral Amputation of feet Bilateral ulcers of the great toe
17.	Sitting Chair Step Test	See pg. 48 of this booklet

1. OBSERVATION (Standing)

No Findings ☐ 1

A. Limb abnormality by observation

Paralysis/paresis	YES	NO
Right arm	☐ 1	☐ 2
Left arm	☐ 1	☐ 2
Right leg	☐ 1	☐ 2
Left leg	☐ 1	☐ 2

IF YES, DESCRIBE _____

_____

_____

B. Confined to a wheelchair ..... YES ☐ 1 NO ☐ 2

C. Amputee/cast

No Findings ☐ 1

	Cast	Amputee	Cast Where	Amputates Where
1. Right arm	☐ 1	☐ 2	☐	☐
2. Left arm	☐ 1	☐ 2	☐	☐
3. Right leg	☐ 1	☐ 2	☐	☐
4. Left leg	☐ 1	☐ 2	☐	☐

5. Fingers - amputated 1
   cast 2

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

5 4 3 2 1 1 2 3 4 5

Right Left

Where - Arm

At shoulder joint	1
Below shoulder and above elbow joint	2
At elbow joint	3
Below elbow and above wrist joint	4
At wrist joint	5
Distal to wrist	6

Where - Leg

At hip joint	1
Below hip and above knee	2
At knee joint	3
Below knee and above ankle joint	4
At ankle joint	5
Distal to ankle	6

2. ARM CIRCUMFERENCE AND SKINFOLD THICKNESS

ARM CIRCUMFERENCE

A. Our first measurements will be taken using your right arm. First, I'll need to find the midpoint between your shoulder and your elbow. I'm going to mark the spot so I can remember where it is.

B. Sit at eye level with the site of measurement. Determine the midpoint of the participant's right upper arm, being sure her right arm is bent at the elbow to form a right angle (90°).

C. Place the tape at zero on the tip of the shoulder. Pull the tape straight down along the back of the arm past the tip of the elbow. Do not bend the tape around the elbow. Locate the tip of the elbow bone (olecranon process) and read the number there to the nearest centimeter. Divide the number by two. The result is the midpoint. Mark the midpoint with the wax cosmetic pencil.

D. Make the appropriate marks on the arm for the triceps subscapular skinfold measurement.

E. Please let your arm hang down and slip it through this tape.

F. Wrap the tape around the arm at the midpoint mark. Check the tension of the tape around the arm. Do not have the tape too loose. Make certain that the tape is flat on the skin all the way around the arm.

G. Take two readings. If they are not within .8 cm of each other, take a third reading. Read the tape to the nearest 0.1 cm.

SKINFOLD THICKNESS

A. Make sure that the caliper dial is set exactly to zero.

B. Have the participant sit on a chair in the same state of undress as for the mid-upper arm CIRCUMFERENCE MEASUREMENT.

C. Sit at the participant's side by the right arm at eye level with the measurement site. Locate the midpoint mark of the arm. Where this line crosses the mid-point mark, draw a short line. You will now have drawn a "+."

D. Next, I am going to pinch a fold of your skin and use these calipers to measure the width. It might smart, but only for an instant.

E. Gently grasp a fold of skin and subcutaneous adipose tissue with your thumb and index finger about 1 cm above the pencil mark.

F. While maintaining a grip on the skinfold with your thumb and index finger, place the caliper tips over the fold of skin beneath your fingers. This should be about 1 cm below your fingers, at the level of the pencil mark.

G. Gently release the handle of the calipers, (still keeping your thumb and index finger in place). Support the caliper in your right hand. **DO NOT RELEASE THE SKINFOLD WITH YOUR LEFT HAND--CONTINUE TO HOLD THE SKINFOLD UNTIL AFTER THE READING IS TAKEN AND YOU HAVE RELEASED THE CALIPER FROM THE ARM.**

IMPORTANT: BE ALERT TO THE POSSIBILITY OF THE PARTICIPANT MOVING HER ARM SUDDENLY. IF THE CALIPER PRESSURE IS NOT RELEASED QUICKLY, BRUISING OR LACERATION MAY RESULT.

H. Approximately 3 seconds after releasing the caliper handles, read the caliper dial. Count to yourself: "one thousand one, one thousand two, one thousand three." Note that the dial will probably continue to move. Look straight down at the dial to avoid parallax from a side view.

I. Read the caliper dial while it is still on the arm, calling out the measurement to 0.2 mm.

J. Take two readings. If they are not within 2 cm of each other, take a third.

2. ARM CIRCUMFERENCE AND SKINFOLD

A. Arm circumference

1st reading	2nd reading	Difference between 1 and 2	Tolerance (0.8 cm.)	3rd reading
☐☐.☐	☐☐.☐	☐.☐		☐☐.☐

B. Circle cuff size and use that cuff for ALL BRACHIAL BP

Arm Circumference	Cuff
< 24 cms	Child
24 - 32 cms	Adult
33 - 41 cms	Lg. arm
> 41 cms	Thigh

C. Skinfold thickness

1st reading	2nd reading	Difference between 1 and 2	Tolerance (2 mm.)	3rd reading
☐☐.☐	☐☐.☐	☐.☐		☐☐.☐

Comments: _____

_____

_____

3. LUNG EXAMINATION

With the participant seated, auscultate the lungs as follows:

A. Listen to posterior chest by asking the participant:

B. Please breathe in and out through your mouth more deeply than usual.

C. Listen to each side of the chest at the lung base, with the stethoscope, beginning on the right side.

D. Listen to at least one entire breathing cycle at each location.

4. HEART EXAMINATION

With the participant still seated, auscultate by listening at Erb's point (third left interspace close to the sternum) and the right and left base. Note if you hear a systolic or diastolic murmur.

Grading of Heart Murmurs

Grade 1	The murmur is not as loud as the heart beat sound. You must concentrate ("tune in") to hear the murmur.
Grade 2	The murmur is at least as loud as the heart beat sounds but not clearly louder.
Grade 3	The murmur is louder than the heart beat sounds but there is no palpable thrill.
Grade 4	The murmur is associated with a palpable thrill.
Grade 5	You can hear the murmur even when only one edge of the stethoscope chest piece is touching the skin (and the other edge is not).
Grade 6	You can hear the murmur even when the stethoscope chest piece is not touching the chest.

3. LUNG EXAMINATION (Auscultate posterior portion of each lung) Breath sounds - intensity — YES / NO Bilateral rales that do not clear with coughing ..... ☐ 1 ☐ 2 IF YES: Have you had a recent worsening in shortness of breath? ☐ 1 ☐ 2	
4. HEART EXAMINATION A. Systolic murmur ..... ☐ B. Diastolic murmur ..... ☐	0 - None 1-6 - Grade 8 - Don't know

Comments: _____

_____

_____

5. HOLTER MONITOR

A. Have the participant assume a semi-recumbent position on the couch or in an armchair with shoulders straight and arms relaxed at sides.

B. Please remove your arms from your gown, but keep the gown draped over your chest. Please try to avoid movements which could cause errors, but feel free to talk.

C. The patches we have put on your chest are attached to a small camera case size monitor that you can carry with you. [If you can leave the monitor on until tomorrow, we will pick it up at your home.] Please avoid electric blankets, waterbeds, and showering while wearing the recorder. If an electrode or wire comes off, call our office at 410-532-2250 for further instruction. Do not open the recorder once recording has begun.

D. Show the recorder to the participant.

E. The recorder picks up only the ECG signals which it receives via the patient cable attached to your chest. It has no microphone, and therefore cannot record voice or other auditory information.

F. Tape the patient lead cable and its wires to the participant's skin, creating stress loops.

G. Make sure that gain settings for channel 1 and channel 3 are on "Full." Check the cassette label to ensure that the proper information has been recorded. Press the pivot arm release button and the pivot arm will swing out.

H. Insert the cassette.

I. Firmly press the participant cable into the participant cable connector.

J. Re-install battery. This starts the recording of the calibration on the tape. The calibration is vital for later ST segment analysis.

K. Insert the recorder into the carrying case.

L. Fasten remaining strap over the recording and participant cable to immobilize the cable connector.

M. Position the recorder at the participant's side using shoulder strap or her belt.

		YES	NO	REASON HOLTER NOT USED:
5.	**HOLTER**	☐ 1	☐ 2	Software malfunction 1
	IF NO, REASON(S)	☐	☐	Hardware malfunction or lack of supplies 2
				Participant refused or uncooperative 3
				Participant medically excluded by staff for safety 4
				Participant unable to physically cooperate 5
				Other (Specify) _____ 6

Instructions to Participant for 24-Hour Ambulatory Recording (for first fifty)

- Show the participant how to reconnect a wire when one becomes loose.
- Show the participant how to reattach any loose electrode or tape.
- After the monitor is attached, review the Information Sheet (Exhibit 3-4-12 if applicable) emphasizing:
  - The date and time to be removed.
  - The equipment is entirely safe.
  - The pointers to improve data quality including:

    When an electrode pad comes off, tape it back in the same place.

    - When a connector becomes loose, snap it back together.
    - Wear cotton underwear when possible, to minimize static in the recording.
    - Do not get the equipment wet. Sponge baths are fine, but not swimming.
    - Electric blankets and heating pads are safe but should not be used because they cause static on the recording.

  - The plan for return of the Holter Monitor.
- Leave the Information Sheet with the participant.

6. RESTING 12-LEAD ECG

A. Turn on power to MAC PC. The LCD displays the Main Menu or Standard display.

B. Always follow this same order when inserting limb lead cables.

1. Start with the left leg. Prepare the skin with alcohol and gauze and rub the area vigorously about ten times.
2. Peel an electrode from the carrier card and apply to the skin, pressing gently to ensure good adhesion. Parting the hair, if present, during application helps adhesion.
3. Follow the same procedures to apply the right leg electrode.
4. Next, go to the left arm. The inside of the lower arm has thinner skin and is the preferred electrode site.
5. Prepare the skin with alcohol and gauze and rub the area vigorously about ten times.
6. Follow the same procedures to apply the right arm electrode.
7. Attach the lead wires (RA, LA, LL, RL) to the four extremities.
8. Double check that the right side (RA, RL) lead wires are on the participant's right side and the left side (LA, LL) lead wires are on the left and attached to the corresponding extremity.

C. Locate positions of the chest electrodes for the Holter Monitor and the ECG.

D. After placing the chest leads, re-drape the top of the gown carefully over the participant's chest. Tie the gown securely to maintain modesty.

E. After preparing the chest and limb electrodes, place the ECG patient cable distribution block on the participant's lap, being extremely careful NOT TO TANGLE the wires. DO NOT PULL OR JERK THE WIRES.

F. Now, please relax, breathe normally, and remain still (without talking) while the tracing is recorded. This will not hurt you.

G. Enter the participant (P) information into the MAC PC.

H. Perform the ECG.

I. Remove the tracing from the MAC PC.

6. RESTING 12-LEAD ECG (Semi-recumbent)

A. Chest square readings

O-E measurement ☐☐.☐

O-V6 measurement ☐☐.☐

B. Results of ECG:

Done ☐ 1

Incomplete ☐ 2

Not done ☐ 3

C. Reason ECG incomplete or not done:

Software malfunction ☐ 1

Hardware malfunction or lack of supplies ☐ 2

Participant refused or uncooperative ☐ 3

Participant medically excluded by staff for safety ☐ 4

Participant unable to physically cooperate ☐ 5

Other (specify) _____ ☐ 6

_____

D. Were the following alert conditions noted?

	YES	NO
1. Atrial fibrillation	☐ 1	☐ 2
2. Atrial flutter	☐ 1	☐ 2
3. Wolf-Parkinson White (WPW) or ventricular pre-excitation	☐ 1	☐ 2
4. Wide QRS ≥ 120 m sec or 3 mm	☐ 1	☐ 2
5. Idioventricular rhythm/complete heart block	☐ 1	☐ 2
6. Ventricular tachycardia or frequent PVC's (3 or more in 30 seconds in the resting rhythm strip)	☐ 1	☐ 2
7. Acute pericarditis	☐ 1	☐ 2
8. Any reference to acute injury, ischemia or myocardial infarction	☐ 1	☐ 2
9. Heart rate at rest (ventricular rate) ≤ 45/min or ≥ 110/min.	☐ 1	☐ 2

IF YES TO D1-D8, DO NOT DO THE SITTING CHAIR STEP TEST

Comments: _____

_____

7. KNEE HEIGHT

A. Have the participant lie semi-recumbent on her back and bend her LEFT knee and ankle, each to a 90° angle. Place the fixed blade of the caliper under the heel of the left foot just below the lateral malleolus of the fibula, so that the shaft of the caliper passes over the lateral malleolus and just posterior to the head of the fibula.

B. Place the movable blade over the anterior surface of the left thigh, above the condyles of the femur, about 2 inches above the patella.

C. Hold the shaft of the caliper parallel to the shaft of the tibia and apply pressure to compress tissue. Take two measurements.

D. Measure knee height on the left leg. If the left leg cannot be measured, use the right leg instead.

8. JOINT EXAMINATION - LOWER EXTREMITY

A. Observe feet for deformities such as bunions or hammer toes - record any amputated toes.

B. Press the index finger over the bony prominence of the tibia or medial malleolus (of the ankle) for several seconds. A depression that does not rapidly refill and resume its original contour indicates pitting edema. Check the presence or absent box for the right and left ankle.

C. Examine knee with participant seated. Knee should be extended with the foot supported by a stool or the examiner's knee and the quadriceps muscle relaxed.

1. Palpate the joint line for tenderness and bony enlargements.

2. Palpate the patella using direct pressure for tenderness.

3. Conduct passive range of motion for each knee. Assess any loss of motion.

4. Check for knee joint manifestations.

D. Examine hip with the participant seated. Conduct passive range of motion for each hip. Test both internal and external rotation of each hip.

E. Put socks on participant if her feet are cold.

7. KNEE HEIGHT

Left knee ☐ 1

Right knee ☐ 2

Participant cannot bend either knee ☐ 3

Other (SPECIFY) ☐ 6

Participant refused ☐ 7

First reading ☐☐.☐ cm

Second reading ☐☐.☐ cm

8. JOINT EXAMINATION -- LOWER EXTREMITY

No Findings ☐ 1

A. Foot abnormalities

	Right				Left			
	YES		NO		YES		NO	
Hammer toes	☐	1	☐	2	☐	1	☐	2
Bunions	☐	1	☐	2	☐	1	☐	2
Amputated toes	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

B. Knee joint manifestations

No Findings ☐ 1

	Right				Left			
	YES		NO		YES		NO	
Crepitus	☐	1	☐	2	☐	1	☐	2
Tender on palpation	☐	1	☐	2	☐	1	☐	2
Pain on passive motion	☐	1	☐	2	☐	1	☐	2
Bony enlargement	☐	1	☐	2	☐	1	☐	2

C. Hip manifestations

	Right				Left			
	YES		NO		YES		NO	
Pain on passive motion	☐	1	☐	2	☐	1	☐	2

D. Ankle edema

	Present		Absent	
Right ankle	☐	1	☐	2
Left ankle	☐	1	☐	2

E. Angular deformity

	Right	Left
	☐	☐

0 = Normal Varus 0-5°
1 = Varus or Valgus of >5°

9. SEMI-RECUMBENT BLOOD PRESSURE

Participant position

Extinguish all smoking material
Meniscus at level of observer's eye
Mercury columns vertical
Arm supported at heart level
Rest right arm on table, palm up
Right sleeve rolled up
Assume relaxed, comfortable position
Sit quietly with legs uncrossed
Cuff applied snugly with bottom edge one inch above crease in elbow

A. When not already done: Please remove your shoes and stockings so that your ankles are bare to the mid-calf.

B. Remove the sleeve from the right arm.

C. Have the participant remain in the semi-recumbent position with her right side toward you and her feet elevated on a stool. The participant should be in the semi-recumbent position for at least 5 minutes before measuring the blood pressure.

D. Place the blood pressure cuff on the participant's right arm. Use the cuff indicated by the arm circumference measurement.
- Right ankle - standard adult cuff
- Left ankle - standard adult cuff

9. SEMI-RECUMBENT BLOOD PRESSURE INDEX

A. Right arm ..... ☐ 1

Left arm ..... ☐ 2

	YES	NO
B. Bedridden	☐ 1	☐ 2
C. Thigh cuff used	☐ 1	☐ 2

D. Seated heart rate ___ ___ ___

IF ≥ 120 OR ≤ 45/MINUTE ALERT: DO NOT DO SITTING CHAIR STEP TEST

E. MIL

Palpated systolic ..... ___ ___ ___

Add 30: + 3 0

Maximal inflation level: (palpated systolic + 30) ..... ___ ___ ___

F. Semi-recumbent auscultatory blood pressure

First reading SBP ___ ___ ___ DBP ___ ___ ___

Second reading SBP ___ ___ ___ DBP ___ ___ ___

Third reading SBP ___ ___ ___ DBP ___ ___ ___

Total SBP ___ ___ ___ DBP ___ ___ ___

Average SBP ___ ___ ___ DBP ___ ___ ___

(REPORT THIS AVERAGE TO PARTICIPANT PER CHART) ------->

DO NOT REMOVE CUFF

CIRCLE INTERSECTION OF SYSTOLIC AND DIASTOLIC

SYSTOLIC	DIASTOLIC					
	≤ 84	85-89	90-99	100-109	110-119	≥ 120
≤ 129	1	2	3	4	5	6
130-139	2	2	3	4	5	6
140-159	3	3	3	4	5	6
160-179	4	4	4	4	5	6
180-209	5	5	5	5	5	6
≥ 210	6	6	6	6	6	6

ENTER AVERAGE OF BP READINGS AND PULSE ON INITIAL FINDINGS REPORT AND CIRCLE SAME NUMBER INDICATED ON THIS CHART.

Comments: _____

_____

10. SEMI-RECUMBENT ANKLE ARM BLOOD PRESSURE

A. Locate the brachial artery and right and left posterior tibial by palpation. Mark each with a wax cosmetic pencil.

B. Apply the standard adult cuffs to the ankles with the midpoint of the bladder over the posterior tibial artery, with the lower end of the bladder approximately 3 cm above the medial malleolus. Spiral the ankle cuffs.

C. Apply Doppler gel to the brachial artery of the right and left posterior tibial pulse points.

D. Connect the sphygmomanometer to the arm cuff at eye level.

E. Determine the Maximum Inflation Level.

F. Right arm systolic blood pressure measurement

1. Sit next to the participant's right arm.
2. Attach the right arm cuff tubing to the manometer.
3. Place the Doppler stethoscope in your ears.
4. Locate the right brachial artery using the stethoscope.
5. Measure the systolic blood pressure using the stethoscope.
   - Inflate the cuff quickly to the MIL
   - Deflate the cuff at 2 mm Hg/second to the appearance of the brachial systolic pressure (the first sound of two consecutive beats)
   - Deflate the cuff quickly and completely
   - Disconnect the right arm cuff from the manometer.
6. Record the right arm systolic blood pressure.

G. Ankle systolic blood pressure measurement: Move to the participant's feet and place the manometer between her ankles.

1. Connect the right ankle cuff to the manometer.
2. Place the Doppler stethoscope in your ears.
3. Locate the right posterior tibial artery using the stethoscope.
4. Measure the systolic blood pressure using the stethoscope.
   a. Inflate the cuff quickly to the maximal inflation level
   b. Deflate at 2 mm Hg/second to the appearance of the right ankle systolic pressure (the first sound of two consecutive beats)
   c. Deflate the cuff quickly and completely
5. Disconnect right ankle cuff from manometer.
6. Record the right ankle systolic blood pressure.
7. Repeat for left ankle.
8. Wait for 30 seconds.

H. Repeat of ankle-arm measurements: Repeat the sequence of measures in the reverse order:

1. Left ankle.
2. Right ankle.
3. Right arm.
4. Remove the cuffs and conducting jelly with an alcohol swab and a soft tissue.

10. SEMI-RECUMBENT ANKLE-ARM BLOOD PRESSURE INDEX

E. Systolic readings

(1) First readings:

Right brachial ..... ☐☐☐

Right posterior tibial ..... ☐☐☐

Left posterior tibial ..... ☐☐☐

(2) Second readings:

Left posterior tibial ..... ☐☐☐

Right posterior tibial ..... ☐☐☐

Right brachial ..... ☐☐☐

F. Ankle-Arm BP not done ..... ☐

REASON NOT DONE ..... ☐

REASON NOT DONE:
Rash/skin sores 1
Ulcers 2
Bil. Amputation-legs 3
Rigid arteries 4
Other (SPECIFY) 6
_____
_____
Participant refused 7

Comments: _____

_____

G. Reason BP not attempted/completed:

Not attempted, you felt unsafe ..... ☐ 1

Not attempted, participant felt unsafe ..... ☐ 2

Unable to determine MIL ..... ☐ 3

Pulse could not be felt/counted ..... ☐ 4

Other (SPECIFY) _____ ☐ 6

_____

Participant refused ..... ☐ 7

H. Comments: _____

_____

11. STANDS - AIDS MAY NOT BE USED

The participant must be able to stand unaided. You may help her get up.

> Now let's move on to a more active part of the exam. I would now like you to try to move your body in different movements. I will first describe and show each movement to you. Then I'd like you to try to do it. If you cannot do a particular movement, or if you feel it would be unsafe to try to do it, tell me and we'll move on to the next one. Let me emphasize that I do not want you to try to do any exercise you feel might be unsafe.
>
> Do you have any questions before we begin?

A. SIDE-BY-SIDE STAND

> 1. Now I will show you the first movement (DEMONSTRATE).
>
> 2. I want you to try to stand with your feet together, side-by-side, for about 10 seconds.
>
> 3. You may use your arms, bend your knees, or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop.

4. Stand next to the participant to help her into the side-by-side position. Allow the participant to hold onto your arm(s) to get balance.

5. Supply just enough support to the participant's arm to prevent loss of balance.

6. When the participant has her feet together, ask if she is ready.

7. Say "when you are ready, let go of my arm." Start timing when the participant lets go.

8. Stop the stopwatch and say "stop" after 10 seconds or when the participant steps out of position.

9. If participant unable to hold for 10 seconds, go to test 13.

B. SEMI-TANDEM STAND

> 1. Now I want you to try to stand with the side of the heel of one foot touching the big toe of the other foot for about 10 seconds. You may put either foot in front, whichever is more comfortable for you.
>
> 2. Please watch while I demonstrate.
>
> 3. You may use your arms, bend your knees, or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I say stop.

4. If participant unable to hold for 10 seconds, go to test 13.

C. TANDEM STAND (eyes open)

> 1. Now I want you to try to stand with the heel of one foot in front of and touching the toes of the other foot for about 10 seconds. You may put either foot in front, whichever is more comfortable for you.
>
> 2. Please watch while I demonstrate.
>
> 3. You may use your arms, bend your knees, or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I say stop.

11. STANDS - AIDS MAY NOT BE USED

(IF NOT ATTEMPTED)

A. SIDE-BY-SIDE STAND

Held for 10 seconds 10
Number of seconds held if less than 10 seconds ..... ☐.☐ (GO TO 12)
Not attempted 87

If not attempted ..... ☐ (GO TO 12)

Tried but unable 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe 3
Participant could not stand unassisted 4
Participant unable to understand instructions 5
Other (SPECIFY _____ 6
Participant refused 7

B. SEMI-TANDEM STAND

Held for 10 seconds 10
Number of seconds held if less than 10 seconds ..... ☐.☐ (GO TO 12)
Not attempted 87

If not attempted ..... ☐ (GO TO 12)

C. TANDEM STAND

Held for 10 seconds 10
Number of seconds held if less than 10 seconds ..... ☐.☐
Not attempted 87

If not attempted ..... ☐ (GO TO 12)

Comments: _____

12. MEASURED WALKS

1. Now we are going to observe how you normally walk. If you use a cane or other walking aid and would feel more comfortable with it, then you may use it.

2. If participant cannot walk, even with an aid such as a cane, walker, or leaning on a wheelchair, code "cannot walk, even with support," and skip to test 13.

A. FIRST USUAL WALK

1. This is our walking course. I want you to walk to the other end of the course at your usual speed, just as if you were walking down the street to go to the store. Walk all the way past the other end of the tape before you stop. I will walk with you. Do you feel this would be safe?

2. Demonstrate the walk for the participant.

3. When I want you to start, I will say: "Ready, begin."

4. Have the participant stand with both feet touching the starting line.

5. WHEN THE PARTICIPANT IS PROPERLY POSITIONED AT STARTING LINE, SAY: "Ready, begin."

6. Press the start/stop button to start the stop watch as the participant begins walking.

7. Walk beside the participant.

8. Press the split button when the participant's toe crosses the 1-meter mark.

9. Stop timing by pressing the start/stop button when the participant's toe crosses the end line.

B. SECOND USUAL WALK

Now I want you to repeat the walk. Remember to walk at your usual pace, and go all the way past the other end of the course.

C. RAPID WALK

Now I want you to repeat the walk. This time I would like you to walk at a RAPID pace as fast as you can, and go all the way past the other end of the course. DEMONSTRATE "Ready? . . . Begin."

12. MEASURED WALKS

Four meters ☐ 1
or
Three meters ☐ 2

No three meter space available ☐ 3 (GO TO 13)

A. Time for first usual pace walk (in seconds)

1. Time for first meter ☐☐.☐
2. Time for 3 or 4 meters ☐☐.☐
3. IF NOT ATTEMPTED/COMPLETED ☐ (GO TO 13)

IF ATTEMPTED (SUCCESSFUL OR NOT)

4. Aids for first walk: ☐

(IF NOT COMPLETED)

Tried but unable 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe 3
Could not walk, even with support 4
Participant unable to understand instructions 5
Other (SPECIFY _____ 6
Participant refused 7

(IF ATTEMPTED)

No aid 1
Wheelchair (as walking aid) 2
Walker 3
Quad cane 4
Other cane 5
Other walking aid 6

Comments: _____

_____

B. Time for second usual pace walk (in seconds)

1. Time for first meter ☐☐.☐
2. Time for 3 or 4 meters ☐☐.☐
3. IF NOT ATTEMPTED/COMPLETED ☐☐ (13)

IF ATTEMPTED (SUCCESSFUL OR NOT)

4. Aids for second walk ☐

(IF NOT ATTEMPTED/COMPLETED)
CODE ALL THAT APPLY

Tried but unable 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe 3
Could not walk, even with support 4
Participant unable to understand instructions 5
Other (SPECIFY _____ 6
Participant refused 7

C. Time for rapid walk (in seconds)

1. Time for first meter ☐☐.☐
2. Time for 3 or 4 meters ☐☐.☐
3. IF NOT ATTEMPTED/COMPLETED ☐

IF ATTEMPTED (SUCCESSFUL OR NOT)

4. Aids for rapid walk ☐

13. CHAIR STANDS

A. Measure height of chair.

B. If participant in wheelchair, say: Can you get up from your wheelchair by yourself?

C. Do you feel it is safe to try to stand up without using your arms?

D. The next tests measure the strength in your legs. First, please fold your arms across your chest and sit so that your feet are on the floor; (DEMONSTRATE)

If participant cannot rise without using arms, say: "O.K., try to stand up using your arms." Then go to test 15.

14. REPEATED CHAIR STANDS

A. Do you think it is safe for you to try to stand up from a chair five times without using your arms?

B. Take participant's heart rate for 30 seconds.

C. Please stand up straight as quickly as you can five times, without stopping in between. After standing up each time, sit down and then stand up again. Keep your arms folded across your chest. (DEMONSTRATE) I'll be timing you with a stopwatch. Please begin when I say "Ready? . . . Stand."

D. Stop if participant becomes tired or short of breath during repeated chair stands. Go to test 15.

E. When the participant is properly seated, say: "Ready? . . . Stand." and begin timing.

F. Count out loud as she arises each time, up to five.

G. Stop the stopwatch when she has straightened up completely the fifth time and all body movement has ceased.

H. If the participant sits down after the fifth stand-up, stop timing as she begins to sit down.

I. Also stop:

1. If participant uses her arms
2. After 1 minute, if participant has not completed rises
3. At your discretion, if concerned for participant's safety.

J. IF THE PARTICIPANT STOPS AND APPEARS TO BE FATIGUED BEFORE COMPLETING FIVE STANDS, CONFIRM THIS BY ASKING: Can you continue?

K. If she says yes, continue timing. If she says no, stop and reset the stopwatch.

L. Take participant's heart rate for 30 seconds.

13. CHAIR STANDS

A. Chair height (floor to seat) ..... ☐☐ inches

	YES	NO	NA
B. Wheelchair	☐ 1	☐ 2	☐ 9
C. Get up	☐ 1	☐ 2 (GO TO F)	
D. Safe to stand	☐ 1	☐ 2 (GO TO F)	

E. Results:

- Participant stood without arms ..... ☐ 1
- Participant used arms to stand ..... ☐ 2 (GO TO 15)
- Test not completed ..... ☐ 3 (GO TO F)

F. IF NOT COMPLETED/ATTEMPTED:

- Unable to stand ..... ☐ 01
- Tried but unable ..... ☐ 02
- Not attempted, you felt unsafe ..... ☐ 03
- Not attempted, participant felt unsafe ..... ☐ 04
- Chair or bed bound ..... ☐ 05

(GO TO 15)

- No suitable chair ..... ☐ 06
- Other (SPECIFY) _____ ☐ 96

_____

- Participant refused ..... ☐ 97

14. REPEATED CHAIR STANDS

	YES	NO	
A. Safe to stand five times	☐ 1	☐ 2	(GO TO D)
B. Heart rate prior	☐☐		

C. (IF FIVE STANDS DONE SUCCESSFULLY, RECORD TIME IN SECONDS.)

Time to complete five stands ..... ☐☐.☐ seconds (GO TO E)

(IF LESS THAN FIVE STANDS, RECORD NUMBER OF STANDS .☐)

D. IF NO STANDS COMPLETED

- Tried but unable ..... ☐ 1
- Not attempted, you felt unsafe ..... ☐ 2
- Not attempted, participant felt unsafe ..... ☐ 3
- No suitable chair ..... ☐ 4
- Participant unable to understand instructions ..... ☐ 5
- Other (SPECIFY) _____ ☐ 6

_____

- Participant refused ..... ☐ 7

E. Heart rate after ..... ☐☐

15. GRIP STRENGTH

A. Conduct examination with the participant in the sitting position with the arm to be tested pressing against her side at a right angle.

B. Check which hand is being tested first (dominant hand) in the space provided in "d". Check which hand is being tested second (non-dominant) in the space provided in "f."

C. In this exercise, I am going to use this instrument to test the strength in your hands. Have you had a recent worsening of pain or arthritis in your wrist, or do you have tendonitis?

D. Have you had any surgery on your hands or arms during the last 3 months?

E. I'd like you to take the arm that you think is stronger, bend your elbow and press your arm against your side. Now, grab the two pieces of metal together like this (Demonstrate). When I say "squeeze," squeeze as hard as you can. It won't feel like the bar is moving, but we are able to get a reading.

F. Press Holter Marker and enter time.

G. I want you to do this three times. If you feel any pain or discomfort, tell me and we will stop.

H. Repeat the examination three times on the dominant hand, then switch the dynamometer to the non-dominant hand and test the grip strength three times on the non-dominant hand. Set dynamometer to "0" after each test. With each test say, "Squeeze as hard as you can" and when they begin to squeeze say, "Sqeeze, squeeze, squeeze."

I. Press Holter Marker and enter time.

15. GRIP STRENGTH

A. Have you had a recent worsening of pain or of arthritis in your wrist, or do you have tendonitis? ..... YES ☐ 1 (GO TO 16) NO ☐ 2

B. Have you had any surgery on your hands or arms during the last 3 months? ..... YES ☐ 1 (GO TO 16) NO ☐ 2

C. Which hand do you use to sign your name? START WITH DOMINANT HAND..... Right ☐ 1 Left ☐ 2

D. Code hand being tested..... Right ☐ 1 Left ☐ 2

PRESS HOLTER MARKER - ENTER TIME Time: ☐☐:☐☐ am..... ☐ 1 pm..... ☐ 2

E. Position of Dynamometer
(1) First try..... ☐☐☐ kg
(2) Second try..... ☐☐☐ kg
(3) Third try..... ☐☐☐ kg

(REPEAT FOR OPPOSITE HAND)

F. Code hand being tested..... Right ☐ 1 Left ☐ 2

G. Position of Dynamometer
(1) First try..... ☐☐☐ kg
(2) Second try..... ☐☐☐ kg
(3) Third try..... ☐☐☐ kg

PRESS HOLTER MARKER - ENTER TIME Time: ☐☐:☐☐ am..... ☐ 1 pm..... ☐ 2

H.a. Was grip strength test done?
Yes, at least two per hand ..... ☐ 1
Yes, at least one per hand..... ☐ 2
Not attempted/completed..... ☐ 3

(IF NOT COMPLETED)
CODE ALL THAT APPLY

Tried but unable 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe ... 3
Participant unable to understand instructions 4
Other (SPECIFY) _____ 6
Participant refused 7

H.b. IF NOT ATTEMPTED/COMPLETED ..... ☐

16. PINCH GAUGE

A. Please put your arm on this (table/arm rest).

B. Bend the participant's elbow to a 90° angle and have the participant press the arm to be tested against her side. The pinch meter should not be resting on anything. This is the position for both pinches.

C. I want you to pinch this meter as hard as you can, using your thumb and index finger, like this.

D. Demonstrate. Then place meter in participant's right hand in the correct position.

E. The correct position is between the pad of her thumb and the lateral surface of the index finger of her right hand.

F. Now, repeat that with your left hand.

G. Again place meter in correct position.

17. UPPER EXTREMITY STRENGTH - OVERHEAD LIFT

A. Have you had any surgery on your upper or lower extremity joints, abdomen, or chest in the past 3 months? IF YES, GO TO TEST 18.

B. Next, I want you to sit facing me and lift this jug so that the bottom of it is at your eye level, and then over your head, before lowering it back to touch your lap.

C. Demonstrate.

D. With the participant seated, place the Purdue Pegboard on her lap.

E. Now lift the weight using both hands. Please do not strain or hold your breath to lift the jug. For safety reasons, I need to loosely hold the handle at the top of the jug, but I will not be helping you lift it. Remember to try to lift the jug so that it goes in front of your eyes and then over your head.

16. PINCH GAUGE

	Right	Left
	☐☐☐ kg	☐☐☐ kg
IF NOT ATTEMPTED/COMPLETED	☐ Right	☐ Left

(IF NOT COMPLETED/ATTEMPTED)

- Tried but unable 1
- Not attempted, you felt unsafe 2
- Not attempted, participant felt unsafe ... 3
- Participant unable to understand instructions 4
- Other (SPECIFY _____ 6
- Participant refused 7

17. UPPER EXTREMITY STRENGTH

	YES	NO
A. Surgery	☐ 1 (GO TO 18)	☐ 2

B. Task completion

- Able to lift over head ..... ☐ 1
- Able to lift to eye level ..... ☐ 2
- Unable to lift to eye level ..... ☐ 3
- Cannot lift jug higher than 1° ..... ☐ 4
- Not attempted ..... ☐ 5
- IF NOT ATTEMPTED/COMPLETED ..... ☐

Comments: _____

_____

18. UPPER EXTREMITIES EXAM

A. WRISTS

1. Observe the right and left wrists for signs of swelling.

2. Gently palpate for tenderness by applying direct pressure on the joint line at the distal radius and ulnar styloid process.

3. Palpate for swelling over the extensor surface and just distal to the ulnar styloid process.

4. Conduct passive range of motion of the right and left wrist by anchoring the forearm with one of your hands, with your other hand holding the participant's hand. Gently bend the participant's hand backward to the limit. Straighten the hand. Then bend the participant's hand forward, closing her fingers to make a fist, to the limit. Open and straighten the hand. Assess any loss of motion and note if the participant complains of pain on passive range of motion.

5. While you examine the wrists, note the presence of radial deviation and carpal subluxation.

B. HANDS - MCP JOINTS

1. Check for tenderness of the MCP joints as a group by performing lateral compression of the hand at the line of the MCP joints. If any joints are tender, confirm by direct palpation over the dorsum of each joint. In addition, directly palpate the MCP 1 joint for tenderness.

2. Ask the participant to close each hand into a fist. When the hand is in a closed fist, inspect the areas between the joints for synovial swelling. . Confirm the swelling by palpation over the dorsum of the joint.

3. Conduct passive range of motion for the MCP joints of the right and left hands by anchoring the participant's hand with one of your hands while your other hand gently extends and flexes the MCP joint(s). Assess loss of motion, if any. The normal range of motion for the MCP joints of the second through fifth digits is -30° (hyperextension) to 90° flexion. If the participant complains of pain, identify individual joints.

C. PIP JOINT

1. Check for tenderness of the PIP joints as a group by compressing both sides of the hand at the line of the PIP joints. If any joints are tender, confirm by direct palpation.

2. Inspect participant's hands for evidence of synovial swelling; distinguish between bony enlargement (Bouchard's Nodes) and synovial swelling by palpation. The bony enlargements will be hard, while synovial thickening/or fluid will be spongy.

3. Conduct passive range of motion for the PIP joints of the right and left hands by anchoring the MCP joints with one of your hands, while your other hand gently extends and flexes the PIP joints as a group. The normal range of motion for PIP joints is from 0° to 90° flexion. Assess any loss of motion. If participant complains of pain, identify individual joints.

18. UPPER EXTREMITIES

No Findings ☐ 1

Hand joint manifestations — Right — Left

1. Wrist

	Right	Left
Tender on palpation	☐	☐
Swelling	☐	☐
Pain on passive motion	☐	☐
Range of motion	☐	☐

0 = No tenderness/swelling/pain
1 = Tenderness/swelling/pain

ROM Score
0 = normal ROM
1 = any loss of motion (LOM)

2. MCP

No Findings ☐ 1

	Right 5	4	3	2	1	Left 1	2	3	4	5
Tender on palpation	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
Swelling	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
Pain on passive motion	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
ROM	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|

0 = No tenderness/swelling/pain
1 = Tenderness/swelling/pain

ROM Score
0 = normal ROM
1 = any loss of motion (LOM)

3. PIP

No Findings ☐ 1

	Right 5	4	3	2	1	Left 1	2	3	4	5
Tender on palpation	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
Swelling	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
Pain on passive motion	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
ROM	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|

0 = No tenderness/swelling/pain
1 = Tenderness/swelling/pain

ROM Score
0 = normal ROM
1 = any loss of motion (LOM)

4. Thumb Interphalangeal Joint

Conduct passive range of motion on the IP joint of each thumb by anchoring the first carpometacarpal joint with one of your hands while the other hand gently extends and flexes the IP joint of one thumb to the limit. Normal range of motion of flexion and extension in the interphalangeal joint of the thumb (first digit) is 35°-90° (Exhibit 3-2-2). Assess any loss of motion and identify if pain is present on passive motion.

D. DIP JOINT

1. Gently palpate the dorso - medial and dorso - lateral aspects of the DIP joints of the right and left hand. Note any tenderness or bony enlargements (i.e., Heberden's nodes). Differentiate bony enlargements from synovial swelling. Bony enlargements will be hard and normally not tender. The synovium will be spongy and sometimes tender.

2. Conduct passive range of motion on each DIP joint of the right and left hand by anchoring the PIP joint of each finger with one of your hands, while the other hand gently extends and flexes the DIP joint to the limit. Assess any loss of motion and identify if pain is present on passive motion.

E. FIRST CARPOMETACARPAL (CMC) JOINT

1 Inspect the first CMC joint for swelling or bony thickening. If either appears to be present, palpate the joint to distinguish between boggy soft tissue swelling or bony thickening and spurs.

2. Abduct the first CMC joint by gently pressing the side of the thumb to the palm of the hand and then abduct the CMC joint by gently raising the thumb from the supinated palm. Identify if pain is present on passive motion.

19. HAND PHOTOS

4. DIP

No Findings ☐ 1

0 = No tenderness/pain/ bony enlargement
1 = Tenderness/pain/ bony enlargement

	Right 5	4	3	2	Left 2	3	4	5
Tender on palpation	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
Pain on passive motion	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|
Bony enlargement	|__|	|__|	|__|	|__|	|__|	|__|	|__|	|__|

5. CMC Joint Manifestations

No Findings ☐ 1

	Right	Left
Tender on palpation	☐ 1	☐ 1
Pain on passive motion	☐ 2	☐ 2
Bony enlargement or spurs	☐ 3	☐ 3

	YES	NO
19. **HAND PHOTOS**	☐ 1	☐ 2

(IF NO, EXPLAIN)_____

_____

20. EXTRA-OCULAR MOVEMENTS

Do you wear glasses? IF YES: Please put them on.

Hold your hands as a target in the midline above eye level, about 20 inches (50 cm) away from the participant. Move your hands rapidly downward in the midline, watching for the appearance of white sclera between the iris and the upper lid margin.

21. CONFRONTATIONAL VISUAL FIELDS - STROKE PATIENTS ONLY

A. Have you had a stroke?
B. Next, please look at my nose and tell me the number of fingers you see on my two hands combined.

Step 1

- Look at the participant's eyes and hold your hands in the upper outer quadrant bilaterally so that she can easily see both hands.
- Your hands should be in the "fisted" position, approximately 3 inches above eye level, 12 inches apart, and equidistant between the participant and your eyes.
- Extend the forefinger and the pointer finger on the right and the forefinger on the left, quickly at the same time. Fingers are extended upward in both upper and lower quadrants.
- The upper quadrant test is negative (no evidence of left or right visual field deficit/extinction) when the participant indicates that she saw three fingers.

Step 2

- Remind the participant to look at your nose. Again look at her eyes and hold your hands in the lower outer quadrant bilaterally so that she can easily see both hands.
- Your hands should be in the "fisted" position, approximately 3 inches below eye level, 12 inches apart, and equidistant between the participant and your eyes.
- Extend the forefinger on the right and left side quickly at the same time.
- The lower quadrant test is negative (no evidence of left or right visual field deficit/extinction) when the participant indicates that she saw two fingers.

Step 3

- If the participant is unable to pass the test (incorrectly identifies the number of raised fingers in the upper or lower quadrant) as outlined in Steps 1 and 2, repeat Steps 1 and 2 twice. Raise your fingers as indicated on the data collection form.

Step 4

- If there are errors on two of the three tests for the upper or lower quadrant, you must determine whether the problem is extinction or visual field deficit. Do this by retesting the impaired quadrant three times using only unilateral movement. Uniform testing of other visual field areas is necessary in this sequence to prevent the participant from guessing where the stimulus is. Use the sequence:

  Trial 1: extend the forefinger and pointer in right upper quadrant, and then the forefinger in the left upper quadrant, then the forefinger and pointer in the right lower quadrant, then the forefinger in the left lower quadrant.

  Trial 2: extend the forefinger and pointer in left upper quadrant, then the forefinger and pointer in the right lower quadrant, then the forefinger in the left lower quadrant, then the forefinger and pointer in the right upper quadrant.

  Trial 3: extend the forefinger in right lower quadrant, then the forefinger and pointer in the left upper quadrant, then the forefinger and pointer in the left lower quadrant, then the forefinger and pointer in the right upper quadrant.

Step 5

- If there were errors on Steps 3 or 4, ask: Can you think of any reason you might have had trouble doing this test?

20. EXTRA-OCULAR MOVEMENTS

	YES	NO
Glasses	☐ 1	☐ 2

Scoring:	Both	Right only	Left only
Yes, full downgaze	☐ 1	☐ 2	☐ 3
Partial downgaze	☐ 1	☐ 2	☐ 3
Unable to gaze down	☐ 1	☐ 2	☐ 3
Not performed	☐ 1	☐ 2	☐ 3

REASON NOT PERFORMED ☐

(IF NOT COMPLETED)
CODE ALL THAT APPLY

Participant unable to understand instructions 1
Other (SPECIFY) _____ 6
Participant refused 7

21. CONFRONTATIONAL VISUAL FIELDS - STROKE PATIENTS ONLY

	YES	NO
Stroke	☐ 1	☐ 2

Which side was affected?	Right	Left	Both
	☐ 1	☐ 2	☐ 3

Extinction

Trial 1	L	R
	①	②
	②	①

Trial 2	L	R
	①	②
	②	①

Trial 3	L	R
	①	②
	②	①

0 - Normal
1 - Abnormal

Visual field deficit

Trial 1	L	R
	① 2	② 1
	① 4	② 3

Trial 2	L	R
	② 4	② 4
	① 3	② 2

Trial 3	L	R
	② 2	② 1
	② 3	① 1

0 - Normal
1 - Abnormal

REASON NOT PERFORMED ☐

Participant could not see 1
Participant unable to understand instructions 2
Other (SPECIFY) _____ 6
Participant refused 7

C. IF PARTICIPANT MAKES ERROR(S): Can you think of any reason you might have had trouble doing this test?	YES ☐ 1	NO ☐ 2

IF YES: Specify

Stroke ☐ 1
Glaucoma ☐ 2
Cataracts ☐ 3
Other (SPECIFY) _____ ☐ 6

22. AUDIOMETRY

A. Before starting, make sure that the lens is centered in the instrument.

B. Select an area that is relatively quiet and free from distracting conversation, fan noises, etc.

C. Screen each ear twice, alternating ears; beginning with the left ear.

D. Select a small, medium, or large AudioSpec ear speculum. Use the largest speculum that can be inserted comfortably into the ear canal, yet still allow visualization of the tympanic membrane. A snug fit assures an acoustic seal of the speculum in the ear canal. Secure the AudioSpec to AudioScope3 by twisting it clockwise onto the instrument.

E. Turn AudioScope3 "ON" by sliding the selection switch to the 40 dB HL screening level. The white indicator band should completely fill the square next to desired sound level. The green "READY" indicator will light, indicating that the instrument is ready for service.

F. I will be placing this instrument in both of your ears, first the left and then the right. You will hear certain sounds or tones. There will be a maximum of 10 tones that you will hear in each ear. Please raise your hand each time you hear a tone in the ear being tested and put your hand down when the tone stops.

G. Before examining either ear, note serous, purulent, or sanguineous discharges from the meatus. If any discharge is present in either ear, **do not examine that ear**. If no discharge is present, select the largest speculum that will fit the cartilaginous canal of the participant's ear.

H. Retract the participant's pinna with the thumb and index finger. Gently pull it slightly up and back. This facilitates insertion of the tip.

I. Grasp AudioScope3 and gently insert speculum tip into the ear canal. Since the lining epithelium of the bony canal is very sensitive, use gentle manipulation to insert the speculum. The handle may also be held in a horizontal position. Use your little finger to stabilize the instrument with respect to the participant's head.

J. Position the tip so that the tympanic membrane or a portion of it can be visualized. This visualization ensures free passage of sound. Before attempting visualization, tip the participant's head toward her opposite shoulder to bring the canal horizontal.

K. Maintain AudioScope3 in the same position and depress the "START" button. The green light will then go out, and tone indicators which show the tone being presented will light sequentially.

L. Observe each tone indicator and the participant's response. If, for any reason (i.e., participant movement, excessive ambient noises, etc.), the test is disrupted, restart it at any time by depressing the "START" button again. It is important to keep AudioScope3 stationary during the test to prevent generation of noise.

M. Repeat Steps 7 through 12 on the opposite ear.

22. AUDIOMETRY

A. Cerumen in ears preventing visualization of tympanic membrane

Right ☐ 1

Left ☐ 2

B. (1) Air conduction – left ear

Frequency (Hz)	Trial 1 YES	Trial 1 NO	Trial 2 YES	Trial 2 NO
1000	☐ 1	☐ 2	☐ 1	☐ 2
2000	☐ 1	☐ 2	☐ 1	☐ 2
4000	☐ 1	☐ 2	☐ 1	☐ 2
500	☐ 1	☐ 2	☐ 1	☐ 2

(2) Air conduction – right ear

Frequency (Hz)	Trial 1 YES	Trial 1 NO	Trial 2 YES	Trial 2 NO
1000	☐ 1	☐ 2	☐ 1	☐ 2
2000	☐ 1	☐ 2	☐ 1	☐ 2
4000	☐ 1	☐ 2	☐ 1	☐ 2
500	☐ 1	☐ 2	☐ 1	☐ 2

C. Results of audiometry:

Test done ☐ 1

Test incomplete ☐ 2

Test not done ☐ 3

D. Reason test incomplete or not done

Tried but unable ☐ 1

Not attempted, you felt unsafe ☐ 2

Not attempted, participant felt unsafe ☐ 3

Participant unable to understand instructions ☐ 4

Other (SPECIFY)_____ ☐ 6

_____

Participant refused ☐ 7

Comments: _____

_____

_____

23. SPIROMETRY

A. Now we will do a test to measure your lung performance.

B. First, I have some questions about your health. (ASK QUESTIONS ON NEXT PAGE.)

C. Enter participant information.

D. Explain and demonstrate the following procedures:

1. Proper placement of the mouthpiece;
2. Maximal inhalation;
3. Blasting of air into the tube.

E. Insert a new spirotube into the mouthpiece.

F. Please stand up and loosen any tight clothing. (Please also remove any loose dentures or gum.) PLACE A NON-ROLLING CHAIR BEHIND THE PARTICIPANT.

G. Please extend and elevate your chin. DEMONSTRATE PLACEMENT OF THE NOSECLIP ON THE NOSE.

H. Have the participant do a trial exhalation.

1. First put this clip on your nose.
2. Take a great big deep breath of air as far as you can inhale.
3. Put the mouthpiece into your mouth and seal your lips tightly around it.
4. Blast your air into the tube as hard and fast as you can.
5. Keep on blowing out the same breath of air until I tell you to stop.

I. Give the sensor to the participant.

J. Coach participant.

K. If participant terminates early, say: Even if you feel empty, small amounts of air are still coming out, so keep pushing and blowing.

L. Conduct one practice and five trials.

Reproducibility:
- 2 FVC'S within 5 percent and
- 2 FEV1'S within 5 percent

Acceptable: Three tests must be free of extrapolated volume errors, obstruction, submaximal effort, coughs, and/or early termination.

23. SPIROMETRY

A. Exclusion questions

	YES	NO
1. In the past 6 weeks, have you had any surgery on your chest or abdomen?	☐ 1	☐ 2
2. Have you had a heart attack in the past 6 weeks?	☐ 1	☐ 2
3. Have you been hospitalized for any other heart problem (i.e., angina or chest pain, congestive heart failure) in the last 6 weeks?	☐ 1	☐ 2
4. Do you have a detached retina or have you had eye surgery within the past 6 weeks?	☐ 1	☐ 2
5. In the past 3 weeks, have you been hospitalized for any respiratory infections, such as flu, pneumonia, bronchitis, or a severe cold?	☐ 1	☐ 2

IF YES TO ANY, SKIP TO TEST 24

EXCLUDE FROM SPIROMETRY ANY PERSON WHO HAD RECENT EYE, CHEST, OR ABDOMINAL SURGERY OR A RECENT HEART ATTACK OR DETACHED RETINA ("YES" IN 1, 2, OR 3) OR WHO WAS HOSPITALIZED FOR ANY RESPIRATORY INFECTIONS ("YES" IN 4).

B. Physical capacity:

In the past 3 weeks have you had any respiratory infections, such as flu, pneumonia, bronchitis, or a severe cold? ☐ 1 ☐ 2

C. Results of examination. Number of trials ☐

Test completed.

- Participant was sitting ☐ 1
- Participant was standing ☐ 2

Test not completed/unsatisfactory ☐ 3

Test not attempted ☐ 4

D. Reason test not attempted/completed (unsatisfactory):

- Equipment failure ☐ 01
- Coughs detected ☐ 02
- Early termination of expiration, insufficient effort ☐ 03
- Participant unable to understand test instructions ☐ 04
- Participant medically excluded by examiner for safety reasons ☐ 05
- Participant unable to physically cooperate ☐ 06
- Other (SPECIFY) _____ ☐ 96

_____

_____

- Participant refused ☐ 97

Comments: _____

_____

24. KNEE EXTENSOR MUSCLE TEST

A. General instructions for use of a manual dynamometer:

1. Position participant comfortably.

2. Measure and/or position the instrument carefully.

3. Attain the correct tester body position.

4. Slowly build up resistance to the participant's motion while coaching.

5. Avoid explosive movements.

6. Gently relieve pressure after the limb has begun to give way and before the limb returns to the surface.

B. Knee Extensor Muscle (Quadriceps) Test

1. Always test the right leg first, unless the participant has had a stroke; then test the unaffected side first.

2. Participant Position - Seat participant in a hard chair. She may place her hands on the front edge of the chair seat but should not lean backwards during the test.

3. Test the participant's right quadriceps first by placing your hand a few inches above her ankle and lift her foot up (extending the knee) until the knee is almost straight. This establishes the participant's passive range of motion.

4. Then ask the participant to lift the foot up to the same position and then lower the knee 15° from the floor. This establishes the participant's active range of motion.

5. Hold the dynamometer with your stronger hand, elbow bent to 90° and pressed in against your abdomen and upper front part of your pelvis for extra support. Your opposite hand may hold onto the wrist of the arm that is holding the dynamometer to give extra strength and stability.

6. With the knee extended 15° from the floor, place an ABD pad and the dynamometer a few inches above the right ankle, between the medial and lateral malleolus.

7. When I count three, I will begin to push against your leg. Please hold your leg here. Don't let me push it down. When I say "push, push, push," I want you to push against the bar as hard as you can. Don't be afraid to push as hard as you can.

8. Push hard enough to move the subject's leg down.

9. Apply pressure for 5 seconds, encouraging the participant to push up, while you push down.

10. Record the trial to the nearest kilogram. Record whether you were able to overcome the participant's resistance by moving the leg down a little.

11. Record if the participant mentions feeling any pain.

12. Reset the dynamometer to ZERO for the next trial.

13. Alternate legs to do two trials on each leg.

24. KNEE EXTENSOR MUSCLE TEST

A. Trial 1

	Right	Left
Reading	☐☐.☐ kg	☐☐.☐ kg
Participant mentioned pain	☐ 1	☐ 1

B. Trial 2

	Right	Left
Reading	☐☐.☐ kg	☐☐.☐ kg
Participant mentioned pain	☐ 1	☐ 1

C. Test not done on right leg ☐

D. Test not done on left leg ☐

IF NOT DONE:

Participant unable to lift foot/knee 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe 3
Other (SPECIFY) _____ 6

_____
Participant refused 7

Comments: _____

_____

_____

25. HIP FLEXION MUSCLE TEST

Test the iliopsoas muscle first manually and then with the dynamometer.

A. Have you had a hip replacement within the past 3 months?

B. Seat the participant in a hard chair. She may place her hands on the front edge of the chair seat but should not lean backwards during the test.

Participants who have difficulty sitting or who are bed bound should be in the supine position on a bed or couch. The participant's knee should be flexed with the heel resting on the bed.

C. Manual Testing

1. Press Holter Marker and enter time.
2. Always test the right side first, unless the participant has had a stroke; then test the unaffected side first.
3. To test the participant's right iliopsoas, hold your hand 5 inches above her knee and, using your other hand, lift her knee up to your hand. This establishes her passive range of motion.
4. Then ask the participant to lift the knee up into your hand (using leg muscles) and then lower the knee so the foot is again on the floor. Again, hold your hand 5 inches above her knee.
5. Assess if: the participant can lift her knee; cannot lift her knee but you could see or palpate contractions; or the participant cannot lift her knee and you cannot see or palpate contractions.
6. Record the strength: 1, 2 or 3.

D. Dynamometer Testing

1. Always test the right side first, unless the participant has had a stroke; then test the unaffected side first.
2. Hold the dynamometer with your stronger hand, elbow bent to 90° and pressed in against your abdomen and upper front part of your pelvis for extra support. Your opposite hand may hold onto the wrist of the arm that is holding the dynamometer to give extra strength and stability.
3. Place the dynamometer immediately proximal to the femoral condyles at the distal thigh.
4. When the dynamometer is in place, say: "Now I want you to lift your knee to my hand. When I count three I will begin to push against your knee. I want you to hold your knee here, don't let me push it down. When I say "push, push, push," I want you to push against the bar as hard as you can. Don't be afraid to push as hard as you can.
5. Push hard enough to move the participant's knee down.
6. Apply pressure for 5 seconds, encouraging the participant to push up while you push down.
7. Record the trial to the nearest kilogram.
8. Record whether you were able to overcome the participant's resistance by moving the knee down a little.
9. Reset the dynamometer to ZERO for the next trial.
10. Alternate knees to do two trials on each knee.
11. Press Holter Marker and enter time.

25. HIP FLEXION MUSCLE TEST

	YES	NO
A. Hip replacement	☐ 1 (26)	☐ 2

B. Position

Seated ☐ 1

Supine ☐ 2

PRESS HOLTER MARKER - ENTER TIME

Time: ☐☐ : ☐☐ am ☐ 1 pm ☐ 2

C. Manual

	Right	Left
Trial 1	☐ (1-3)	☐ (1-3)

IF PARTICIPANT CANNOT LIFT KNEE, GO TO TEST 26

No contraction, cannot lift knee 1
Contractions, cannot lift knee 2
Can lift knee 3

D. Dynamometer

	Right	Pain	Left	Pain
Trial 1	☐☐.☐ kg	☐ 1	☐☐.☐ kg	☐ 1
Trial 2	☐☐.☐ kg	☐ 1	☐☐.☐ kg	☐ 1

E. If test not attempted/completed ..... Right ☐ Left ☐

(IF NOT ATTEMPTED/ COMPLETED)

Participant unable to lift foot/knee 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe 3
Participant unable to understand instructions 4
Other (SPECIFY) _____ 6

Participant refused 7

PRESS HOLTER MARKER - ENTER TIME

Time: ☐☐ : ☐☐ am ☐ 1 pm ☐ 2

Comments: _____

_____

26. SHOULDER ROTATION

A. Now I'd like you to put both hands behind your neck at the level of your ears. Keep your arms parallel to the floor and point your elbows out to the side.

B. Demonstrate position.

C. The participant performs the test for both sides simultaneously; score her separately for each side. She should sit erect or stand. Face her to score this test.

D. Now I'd like you to move your arms behind your back and touch your fingers together behind your back.

E. Demonstrate position.

F. The participant performs the test for both sides simultaneously; score her separately for each side. She should be sitting erect.

26. SHOULDER ROTATION

A. EXTERNAL

Right shoulder..... ☐

Left shoulder..... ☐

B. INTERNAL

Right shoulder..... ☐

Left shoulder..... ☐

1 - Fully
2 - Partially
3 - Unable
7 - Refused

Comments: _____

_____

_____

27. **SOMATIC SENSORY - FOR STROKE PATIENTS ONLY** (Answer to Question 21A is "Yes.")

A. Now I am going to see how well you can locate one hand with the other. I will be asking you to close your eyes and place this "Thumb target" on your affected thumb. Then I will move the arm into four different positions. After I have moved your arm into the different positions, I will ask you to locate the thumb of your affected hand with the thumb of your non-affected hand. Once your thumb makes contact with your other thumb or the target, stop moving it.

B. DEMONSTRATE. Do you have any questions?

C. Which arm was affected by the stroke?

D. Place target on affected thumb.

E. Using the affected arm:

Position 1

1. Randomly move the affected arm. Then flex the affected arm anteriorly to 90°, with the forearm pronated, the elbow flexed to 45°, hand "fisted," and the thumb pointing. Support the arm at the elbow and the wrist.

2. Now try to locate the thumb of your _____ hand with the thumb of your _____ hand.

3. Note the distance to the nearest half inch between the affected thumb and the nonaffected thumb on the "Thumb target" when the unaffected thumb first touches the target. If in between, round up (i.e., 2.75 = 3, 2.25 = 2.5, etc.)

Position 2

1. Randomly move the affected arm. Then flex the affected arm anteriorly to 90° with the forearm pronated. The elbow should be slightly flexed, hand "fisted," and the thumb pointing. Support the arm at the elbow and the wrist.

2. Now try to locate the thumb of your _____ hand with the thumb of your _____ hand.

3. Note the distance to the nearest half inch between the affected thumb and the nonaffected thumb on the "Thumb target" when the unaffected thumb first touches the target. Round up.

Position 3

1. Randomly move the affected arm. Then flex the affected arm to 45° angle, with the forearm pronated, the elbow flexed to 45°, the hand "fisted," and the thumb pointing. Support the arm at the elbow and wrist.

2. Now try to locate the thumb of your _____ hand with the thumb of your _____ hand.

3. Note the distance to the nearest half inch between the affected thumb and the nonaffected thumb on the "Thumb target" when the unaffected thumb first touches the target. Round up.

Position 4

1. Randomly move the affected arm. Then flex the affected arm to a 45° angle with the forearm pronated, the elbow slightly flexed, the hand "fisted," and the thumb pointing. Support the arm at the elbow and wrist.

2. Now try to locate the thumb of your _____ hand with the thumb of your _____ hand.

3. Note the distance to the nearest half inch between the affected thumb and the nonaffected thumb on the "Thumb target" when the unaffected thumb first touches the target. Round up.

27. **SOMATIC SENSORY**

	Yes	No
A. Strokes	☐ 1	☐ 2 (GO TO 28)

B. Upper quadrants	Side 1	Side 2
Flexed	☐ R ☐ L ☐☐.☐ inches	☐ R ☐ L ☐☐.☐ inches
Extended	☐ R ☐ L ☐☐.☐ inches	☐ R ☐ L ☐☐.☐ inches

C. Lower quadrants	Side 1	Side 2
Flexed	☐ R ☐ L ☐☐.☐ inches	☐ R ☐ L ☐☐.☐ inches
Extended	☐ R ☐ L ☐☐.☐ inches	☐ R ☐ L ☐☐.☐ inches

D. Task not completed:

Tried but unable	☐ 01
Not attempted, you felt unsafe	☐ 02
Not attempted, participant felt unsafe	☐ 03
Participant unable to understand instructions	☐ 04
Pain	☐ 05
Contractures	☐ 06
Other (SPECIFY) _____	☐ 96
Participant refused	☐ 97

Comments: _____

_____

_____

28. PURDUE PEGBOARD

A. Have the participant seated comfortably at a table approximately 30" high.

B. Place the Purdue Pegboard directly in front of the participant with the cups at the far end of the board.

C. The right cup and the left cup should contain approximately 15 pins each.

D. When the participant is ready to begin, say: This is a test to see how quickly and accurately you can work with your hands. Before you begin each part of the test, I will tell you what to do and then you will have an opportunity to practice. Be sure you understand exactly what to do.

E. Right hand. Before each test, demonstrate the required test. Begin by saying and demonstrating: Pick up one pin at a time with your right hand from the right-hand cup. LEAVE THE PIN USED FOR DEMONSTRATION IN THE HOLE. It is not necessary to push the pin all the way down. DURING DEMONSTRATION PURPOSELY DROP PIN. If during the testing time you drop a pin, do not stop to pick it up. Simply continue by picking another pin out of the cup.

F. Now you may insert a few pins for practice.

G. Correct any errors made in placing the pins, and answer any questions.

H. When the participant has inserted three or four pins and appears to understand the operation, say: Stop. Now take out the practice pins and put them back into the right-hand cup.

I. When I say "Begin," start placing the pins from the right-hand cup into all the holes in the row, starting with the top hole. I want you to fill all the holes. I will be timing you. Work as rapidly as you can. Remember, if you drop a pin, do not stop to pick it up. Pick another pin out of the cup.

J. Be sure the participant's hand is at the side of the board. Then say "Ready, begin." Start timing when you say "begin." After the participant completes placing the 10 pins from the right cup into the row of holes, **stop the stopwatch**.

K. Repeat Steps E through J for the left hand.

28. PURDUE PEGBOARD FORM

Right hand..... Seconds: ☐☐.☐

Left hand ..... Seconds: ☐☐.☐

Reason not attempted/completed:

Right..... ☐

IF TRIED BUT UNABLE: # OF PINS: ☐

Left..... ☐

IF TRIED BUT UNABLE: # OF PINS: ☐

Tried but unable 1
Not attempted, you felt unsafe 2
Not attempted, participant felt unsafe 3
Participant unable to understand instructions 4
Other (SPECIFY) _____ 6

Participant refused 7

Comments: _____

_____

_____

29. VIBRATION

A. Test the right toe. If right toe missing or can't test, test the left toe.

B. During the testing, the bottom of the right great toe should be centered over the vibrating rod. No other part of the foot or the toes should be touching the rod or its housing.

C. "I'm going to place your right great toe on this rod. (Have participant place toe on rod). The rod is vibrating now and this is the strongest the intensity will be. I will ask you if the rod is vibrating the first or second time. It is up to you to decide which time it is vibrating, either the first or second time. The intensity of the vibration will be decreasing until you can't feel it anymore. Even when you can't feel the vibration anymore I'd like you to guess anyway."

D. An ideal duration for contact is approximately 2 seconds. You should place your index finger on top of the great toe so you can feel the vibration through the toe. If the participant is pushing down too hard on the vibration rod, you will not feel the vibration.

E. Start at 22.4 vibration units intensity. This should give you at least eight trials without an error. For each setting ask, "Which trial is vibrating, #1 or #2?" Later, abbreviate to just "#1 or #2?"

F. If the participant is correct on the first trial, reduce the vibration intensity by approximately 10 percent. (This is indicated on the form vertically.) Continue this procedure until she makes her first error.

G. When the participant makes her first error, repeat the same intensity level twice, for a total of three trials at that level. For these trials at the same intensity level, follow the 1/2 matrix horizontally on test 29.

H. Circle the starting intensity, in vibration units, on the left hand column of the examination form. The location of the stimulus (1 or 2 rod) is indicated by the first column in the 1/2 matrix.

I. If the participant is correct on the first trial at an intensity level, go straight down one row to the next intensity (approximately 10% less) for the next trial. Continue this process until the first error occurs.

J. When the participant makes her first error, repeat the identical intensity twice, for a total of three trials at that level. For these trials at the same intensity level, follow the 1/2 matrix horizontally.

1. If the trial of the stimulus is correctly identified on two of the three trials, follow the 1/2 matrix down diagonally, from the last 1/2 position tested to the adjacent 1/2 position at the next lower intensity level (below and one to the right).

2. If errors are made on two of the three trials, follow the 1/2 matrix up diagonally from the last 1/2 position tested to the 1/2 position at the next higher intensity level (immediately above and one to the right).

3. If errors are made at two successive settings (1/2 setting) at a given level, the third stimulus is not necessary. Follow the matrix up diagonally at that point.

K. Repeat all levels below 1.0 units twice, even if the participant selected the correct stimulus position on the first trial.

L. Testing is completed when the participant has made a total of five errors. A single error often appears early in the testing sequence.

Comments: _____

_____

29. VIBRATION

Toe tested? ..... Right ☐ 1 Left ☐ 2

Vibration No.____

☐ 1 valid test ☐ 2 invalid test ☐ 7 refused ☐ 8 unable to test (e.g., toes missing) Specify: _____

Toes cold to touch..... YES ☐ 1 NO ☐ 2

Vibration intensity — CIRCLE IF CORRECT. CROSS OUT IF INCORRECT. STOP AT 5 ERRORS.

22.4	1	1	2	1	1	2	1	2	1	1	1	1	2	1	2	2
22.0	2	1	1	2	1	1	2	2	2	1	1	2	2	1	2	1
20.0	2	2	1	2	1	2	1	1	2	1	2	2	2	2	2	1
18.0	1	1	2	2	2	2	1	1	2	1	2	1	2	1	1	2
16.2	1	2	1	1	2	1	2	1	2	2	1	2	1	2	2	2
14.6	1	2	1	1	2	1	2	1	2	2	2	1	2	1	1	1
13.1	2	2	1	2	2	1	1	2	1	2	1	2	2	2	2	2
11.8	2	2	1	2	1	1	1	2	2	1	2	2	2	2	1	2
10.6	1	2	2	1	1	2	2	2	1	1	1	2	2	1	2	1
9.5	2	2	1	1	2	1	1	2	2	1	2	2	1	2	2	2
8.6	1	1	1	2	2	2	2	1	1	2	2	2	1	2	1	2
7.7	1	1	2	1	1	2	2	1	2	2	2	2	1	1	1	1
6.9	2	2	1	1	2	2	1	1	1	1	2	1	2	1	1	2
6.2	1	2	1	1	1	2	2	2	1	1	1	2	2	1	2	2
5.6	2	2	2	2	2	1	1	1	2	2	2	2	1	1	1	2
5.0	2	2	1	2	2	2	2	1	1	2	1	1	1	1	2	1
4.5	1	1	1	2	1	1	1	2	1	1	1	2	2	2	1	1
4.1	1	1	1	1	1	2	2	1	2	2	2	2	1	1	1	1
3.7	1	1	2	1	1	2	2	1	1	2	2	2	2	1	1	1
3.3	1	1	1	2	2	1	1	2	2	2	2	1	1	2	1	1
3.0	2	2	1	2	1	2	1	2	1	1	2	2	2	2	2	1
2.7	1	1	2	1	2	2	1	1	2	1	2	1	2	1	1	2
2.4	2	1	1	2	1	1	2	2	1	2	1	2	2	1	2	1
2.2	2	2	1	2	1	2	1	2	1	1	2	2	1	2	2	1
2.0	1	1	2	2	2	2	1	1	2	1	2	1	2	1	1	2
1.8	1	2	1	1	2	1	2	1	2	2	1	2	1	2	2	2
1.6	1	2	1	1	2	1	2	1	2	2	2	1	2	1	1	1
1.4	2	1	1	2	1	1	2	2	1	2	1	2	2	1	2	1
1.2	2	2	1	2	1	2	1	2	1	1	2	2	1	2	2	1
1.1	1	1	2	2	2	2	1	1	2	1	2	1	2	1	1	2
0.9	1	2	1	1	2	1	2	1	2	2	1	2	1	2	2	2
0.8	1	2	1	1	2	1	2	1	2	2	2	1	2	1	1	1

5 errors

1 _____

2 _____

3 _____

4 _____

5 _____

5 lowest correct

1 _____

2 _____

3 _____

4 _____

5 _____

Followed directions..... YES ☐ 1 NO ☐ 2

30. **SITTING CHAIR STEP TEST - EXCLUSION CRITERIA**

A. Prior to visit, check interview data form for potential exclusions:

History of aortic stenosis	☐	01
History of myocardial infarction within last 6 months	☐	02
History of unstable angina or angina at rest	☐	03
Severe pain in hip or knee due to osteoarthritis or rheumatoid arthritis	☐	04

If positive, requestion participant at time of visit.
If no exclusions, calculate the Maximum Predicted Heart Rate

B. At time of visit, assess participant for following exclusions:

Bedridden	☐	05
Chairbound	☐	06
Acute infection (i.e., respiratory, urinary, etc.)	☐	07
Unstable angina or angina at rest	☐	08

C. At exam, evaluate participant for:

Loud systolic murmur suggestive of aortic stenosis	☐	09
Acute congestive heart failure: bilateral rales (more than basilar)	☐	10
Shortness of breath at rest	☐	11
Resting diastolic blood pressure > 110 mmHg or resting systolic blood pressure > 200 mmHg	☐	12
Severe weakness in one or both legs < 4/5 on manual exam	☐	13
Heart rate is greater than 75% of MPHR	☐	14

D. Evaluate ECG for:

Atrial fibrillation	☐	15
Atrial flutter	☐	16
Wolf-Parkinson White (WPW) or ventricular pre-excitation	☐	17
Wide QRS $\geq$ 120 m sec or 3 mm	☐	18
Idioventricular rhythm/complete heart block	☐	19
Ventricular tachycardia or frequent PVC's (3 or more in 30 sec in the resting rhythm strip)	☐	20
Acute pericarditis	☐	21
Any reference to acute injury, ischemia or myocardial infarction	☐	22
Heart rate at rest (ventricular rate) $\leq$ 45/min or $\geq$ 120/min.	☐	23

E. Evaluate rhythm strip for:

Ventricular arrhythmias: $\geq$ 3 PVC's per 30 seconds (distinguish from PAC's)	☐	24

IF PARTICIPANT IS EXCLUDED, GO TO CLOSING, PAGE 52.

30. SITTING CHAIR STEP TEST

A. Participant should be in a hard, straight-backed chair, preferably wooden, and one in which she can touch her feet to the floor. Make sure that chair cannot slide back easily.

B. Attach the universal test cable to the MAC PC and run a rhythm strip check the "RS" box on the grid "at start." Remove Holter from participant's shoulder and place on floor or hang on chair.

C. Tape the oximeter finger probe on the left forefinger. If the O_2 saturation is $\leq$ 80, or heart rate is greater than 75% of predicted maximum, do not do the test.

D. Record the resting heart rate and the O_2 saturation on the "at start" line on the grid.

E. Replace the blood pressure cuff on the right arm and take a "quick" right brachial auscultatory blood pressure. Record on the "at start" line of the grid.

F. Next we have a test which will help us understand your level of fitness. This test is considered safe for someone in your situation.

G. Demonstrate test with 6" step, using the metronome set for one-second beats.

H. Do you see any reason why you could not perform this test?

YES ..... ☐ 1 (RECORD REASON AND GO TO CLOSING)

NO ..... ☐ 2

IF YES: Reason_____

_____

I. Give the Rating of Perceived Exertion Scale card to the participant.

J. During this exercise test, we want you to pay close attention to how hard you feel the work is. This feeling should reflect your total amount of exertion and fatigue, combining all sensations and feelings of physical stress, effort, and fatigue. In giving me this score, don't concern yourself with any one factor such as leg pain, shortness of breath, or exercise intensity, but try to concentrate on your total inner feeling of exertion. Don't underestimate or overestimate, just be as accurate as you can.

K. What would you say your overall feeling of exertion is right now?

L. Record in the "RPE" box on the "at start" line.

M. If you need to stop this test, you may stop. If you have any feelings of chest pain or excessive shortness of breath or fatigue, please tell me.

O. Set the metronome for one-second beats. Start the metronome.

30. **SITTING CHAIR STEP TEST** (continued)

O. STAGE 1: Use the 6" step. Place the 10-lb. weight on the step to stabilize it. Place the step so that the participant's ankle rests on the edge of the step when her leg is fully extended.

P. When the participant begins to step on the step, start the stopwatch and simultaneously push the marker on the Holter Monitor.

Q. At 2 minutes: (start at 1 minute and 45 seconds)

- Record the heart rate and 0_2 saturation
- Run a 30-second rhythm strip; observe for ST-T changes or ↑ ventricular premature beats
- Obtain and read a "quick" right brachial auscultatory blood pressure; evaluate for stepping criteria

R. Stop the test if conditions listed on bottom of next page exist. If persons says they are tiring out or complains of other symtoms, ask: Do you think you can continue for another minute?"

S. If the participant can complete the 2-minute without an endpoint being reached, continue at the same level for 1 more minute.

T. At the 3-minute interval, stop the stopwatch and record the heart rate and 0_2 saturation and RPE. Clear the stopwatch to ZERO.

U.	Are you having any chest pain, dizziness, lightheadedness, or shortness of breath?

V. IF YES: RECORD UNDER SYMPTOMS AND STOP TEST.

W. If the participant can complete the 3-minute interval without symptoms, ask if she is willing to go on.

X. STAGE 2: Using the 12" step, repeat the protocol for Stage 1. Place the 6" step inside the 12" step and clip them together.

Y. STAGE 3: Using the 18" step, repeat the protocol for Stage 1.

Z. STAGE 4: The participant again uses the 18" step, but places her hands on her knees palms down. As her foot is moved to the step, her hand on the same side of the body is raised to shoulder level and extended over her leg. As her foot returns to the floor, her hand is returned to the knee. Demonstrate this procedure. Then repeat the protocol for Stage 1.

AA. Whenever a test end point is reached, press the Holter Marker and record the time.

BB. Start the stopwatch to measure time for heart rate and O_2 saturation to reach normal range.

CC. Record the Borg RPE score.

DD. Record the heart rate.

EE. Record the O_2 saturation.

FF. Run a 30-second rhythm strip.

GG. Obtain and record a "quick" right brachial auscultatory blood pressure.

HH. Leave the oximeter in place until the heart rate and 0_2 saturation returns to the participant's baseline. Record the number of minutes lapsed for the heart rate and 0_2 saturation to return to a normal range.

II. Ask participant how she feels. Tell her she did a great job and get her some water or juice if she would like it.

30. **SITTING CHAIR STEP TEST** (continued)

B. 75% MPHR: (220 - _____) X 0.75 = ... ☐☐☐
age

PRESS HOLTER MARKER ..... Time: ☐☐ : ☐☐ am..... ☐ 1
pm..... ☐ 2

	HR	0_2%	RS	BP	RPE	Symptoms
AT START						
Stage 1 (6") (2 min.)						
(3 min.)						
Stage 2 (12") (2 min.)						
(3 min.)						
Stage 3 (18") (2 min.)						
(3 min.)						
Stage 4 (18") (2 min.)						
with arm raised (3 min.)						

Code all that apply:

1 - SOB
2 - Chest pain
3 - Dizziness
4 - Leg pain
5 - Excessive fatigue

AT END POINT:

PRESS HOLTER MARKER ..... Time: ☐☐ : ☐☐ am..... ☐ 1
pm..... ☐ 2

Heart rate ..... ☐☐☐

0_2%: ..... ☐☐☐

Rhythm strip ..... ☐

Blood pressure ..... ☐☐☐ / ☐☐☐

RPE Score ..... ☐☐

Minutes to normal range ..... ☐☐

Where did participant stop test?
During or immediately after:

Stage 1 - 2 min ☐ 1
Stage 1 - 3 min ☐ 2
Stage 2 - 2 min ☐ 3
Stage 2 - 3 min ☐ 4
Stage 3 - 2 min ☐ 5
Stage 3 - 3 min ☐ 6
Stage 4 - 2 min ☐ 7
Stage 4 - 3 min ☐ 8

REASON(S) STOPPED BEFORE END OF TEST ☐☐
(Use codes from below)

Stop the test if:

01. participant says she has chest pain, OR
02. participant says she is feeling lightheaded or dizzy, OR
03. participant says she is (or appears to be) short of breath
04. blood pressure is > 200 systolic or > 110 diastolic or < 90 systolic or <60 diastolic
05. 0_2 saturation $\leq$ 80
06. heart rate is greater than 75% of predicted maximum
07. Borg scale rating is 8 or higher
08. participant says she cannot go on
09. ECG: PVC's > 3/30 seconds
10. ECG: wide QRS (> 3 mm)
11. ST↓ @ 2 mm past end of QRS, exceeding 1 mm with respect to PR baseline
12. ST↓ present @ rest
96. Other (SPECIFY) _____

Appendix E

Disease Ascertainment Algorithms

Linda P. Fried, Judith D. Kasper, Jeff D. Williamson, Elizabeth A. Skinner, Carol D. Morris, Marc C. Hochberg for the Disease Ascertainment Working Group*

To evaluate the relationship of individual chronic diseases and disability, it was essential to ascertain the presence of each of the major chronic diseases and conditions in a uniform and rigorous manner. To accomplish this, state-of-the-art clinical and epidemiological criteria for determining the presence of diseases were selected. For certain diseases (e.g., rheumatoid arthritis and osteoarthritis), decision trees were available with explicit criteria for disease presence as well as level of certainty. For other diseases, the Disease Ascertainment Working Group developed decision algorithms that would use the data collected in the Women's Health and Aging Study (WHAS).

Algorithms are presented on the following pages for the 17 major chronic diseases and conditions ascertained in the WHAS (Figures E.1-E.17). The algorithms start with data from the baseline interview, the nurse's examination, and the participant's current medication list. For certain diseases, these data were insufficient and additional information was used to validate the presence of a disease. For a few diseases, additional evaluations, including radiographs of the hips or knees and blood tests (e.g., glycohemoglobin level for diabetes mellitus) were used to determine presence of disease. For many conditions, responses by the participant's primary care physician to a questionnaire were used to confirm the diagnoses (Appendix F). Surveillance procedures were used to obtain hospital or outpatient records when other data were not sufficient, and these were then reviewed by WHAS clinician-epidemiologist investigators to confirm the presence of disease (Appendix F).

A study was performed to evaluate the reliability of disease ascertainment algorithms. For each disease, participants' records were reviewed first by a medical abstractor using the disease algorithms. For each disease, 15 to 20 charts to be reviewed were chosen at random from three categories of disease (definite disease, possible disease, and no disease) by the medical records abstractor, based on the abstractor's initial classification. Three WHAS clinician-epidemiologists then independently applied the relevant data to the algorithm and classified the participants according to

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* Members of the Disease Ascertainment Working Group: Linda P. Fried, chair; Frederick Brancati, M. Chiara Corti, Luigi Ferrucci, Jack M. Guralnik, Kathy Helzlsouer, Marc C. Hochberg, Judith D. Kasper, Steven Kittner, Carol Morris, Marco Pahor, Marcel E. Salive, E. Ann Skinner, Elizabeth Solak, and Melvyn Tockman

disease status. Kappa values were calculated to assess inter-rater reliability for each algorithm, and results for the 15 algorithms tested are shown in Table E.1. Where raters disagreed, the algorithms were modified appropriately and retested, resulting in complete agreement as to disease presence. Because of time constraints, algorithms for peripheral arterial disease (Figure E.4), and cancer (Figure E.17) had not been tested as of the time of publication.

Table E.1: Inter-Rater Reliability of Disease Algorithms

		Number of cases reviewed		
		Classification by first reviewer		
Chronic disease	Kappa	Definite disease	Possible disease	No disease
Angina pectoris	1.00	7	5	5
Myocardial infarction	1.00	5	5[1]	5
Congestive heart failure	1.00	5	5	5
Hip fracture	1.00	5	0	5
Osteoporosis	1.00	5	5	5
Osteoarthritis of the knee	1.00	10[2]	0	5
Osteoarthritis of the hip	0.93	10[2]	5	5
Osteoarthritis of the hand	1.00	10[2]	5	5
Rheumatoid arthritis	0.90	5	5	5
Degenerative disc disease	1.00	5	5	5
Spinal stenosis	1.00	5	5	5
Stroke	1.00	1	5	5
Parkinson's disease	0.80	5	0	5
Pulmonary disease	0.93	13[3]	3	5
Diabetes mellitus	0.80	5	5	5

[1] Silent myocardial infarction, by ECG
[2] Five cases definite and symptomatic, 5 cases definite and asymptomatic
[3] Including definite asthma, emphysema or bronchitis

How to read the algorithms

Each algorithm traces the decision pathways in the explicit criteria for disease presence and level of certainty. The data elements and their sources are specified, indicated in the algorithms as follows:

Boldface type: These elements come from the participant, either from the screener or baseline questionnaire (Appendix B). The question number is usually presented in the box and the required response or value indicated in the pathway.

Double outlined box: These elements come from the nurse's examination (Appendix D) or additional evaluations such as blood tests and hip and knee radiographs (Appendix F).

Italics: These elements come from surveillance, including the physician questionnaire ("*MD Questionnaire*") and medical record abstraction (Appendix F). Question numbers appearing in the surveillance boxes refer to items in the baseline questionnaire that asked the participant to name a doctor or hospital where a diagnosis was made or treatment was received.

Medications box: If medication use was considered in the algorithm, the medications of interest are specified separately in a box.

References: Algorithms that were derived from existing criteria are referenced on the algorithm, with the full citations given below.

Abbreviations:

DK: The source (e.g., the participant or physician) does not know whether something occurred or had been diagnosed.

NA, Not Avail: The item could not be located, for example the record could not be found or the physician questionnaire was not completed.

References Cited in Algorithms

Acheson RM, Collart AB, Greenberg RH, Clemett AR. (1969). New Haven Survey of Joint Disease: Photograph and other variables in screening for arthritis of the hands. *Am J Epidemiol* 90:224-235.

Altman RD. (1991). Classification of disease: Osteoarthritis. *Sem Arthritis Rheum* 20(Suppl. 2):40-47.

Arnett FC, Edworthy SM, Bloch DA, McShane DJ, Fries JF, Cooper NS, Healey LA, et al. (1988). The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis. *Arthritis Rheum* 31:315-324.

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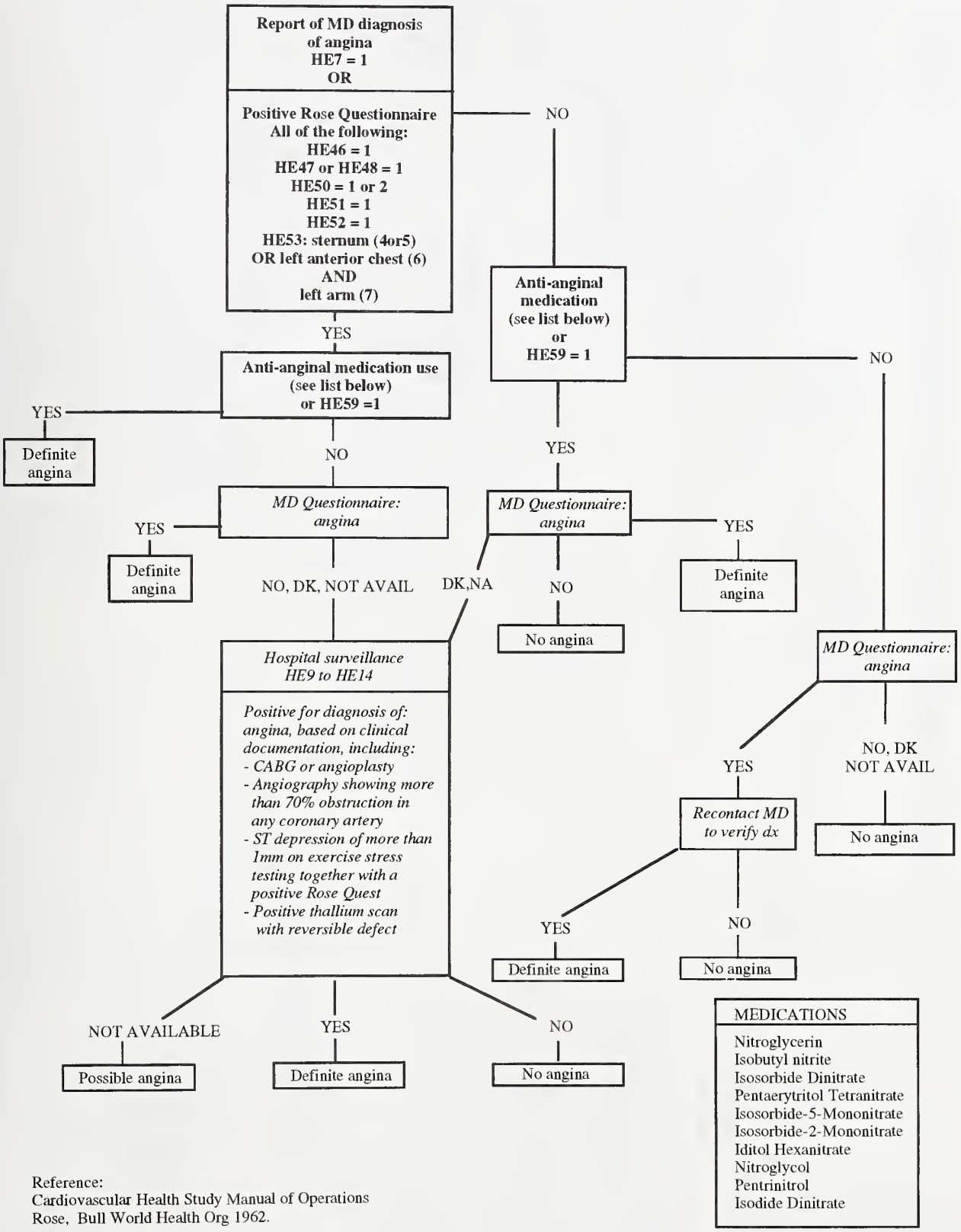
Ferris BG Jr. (1978). Epidemiology Standardization Project (American Thoracic Society). *Am Rev Respir Dis* 118(Suppl.):1-120.

National Center for Health Statistics. (1994). Plan and operation of the Third National Health and Nutrition Examination Survey, 1988-94. *Vital Health Stat*, series 1, no. 32.

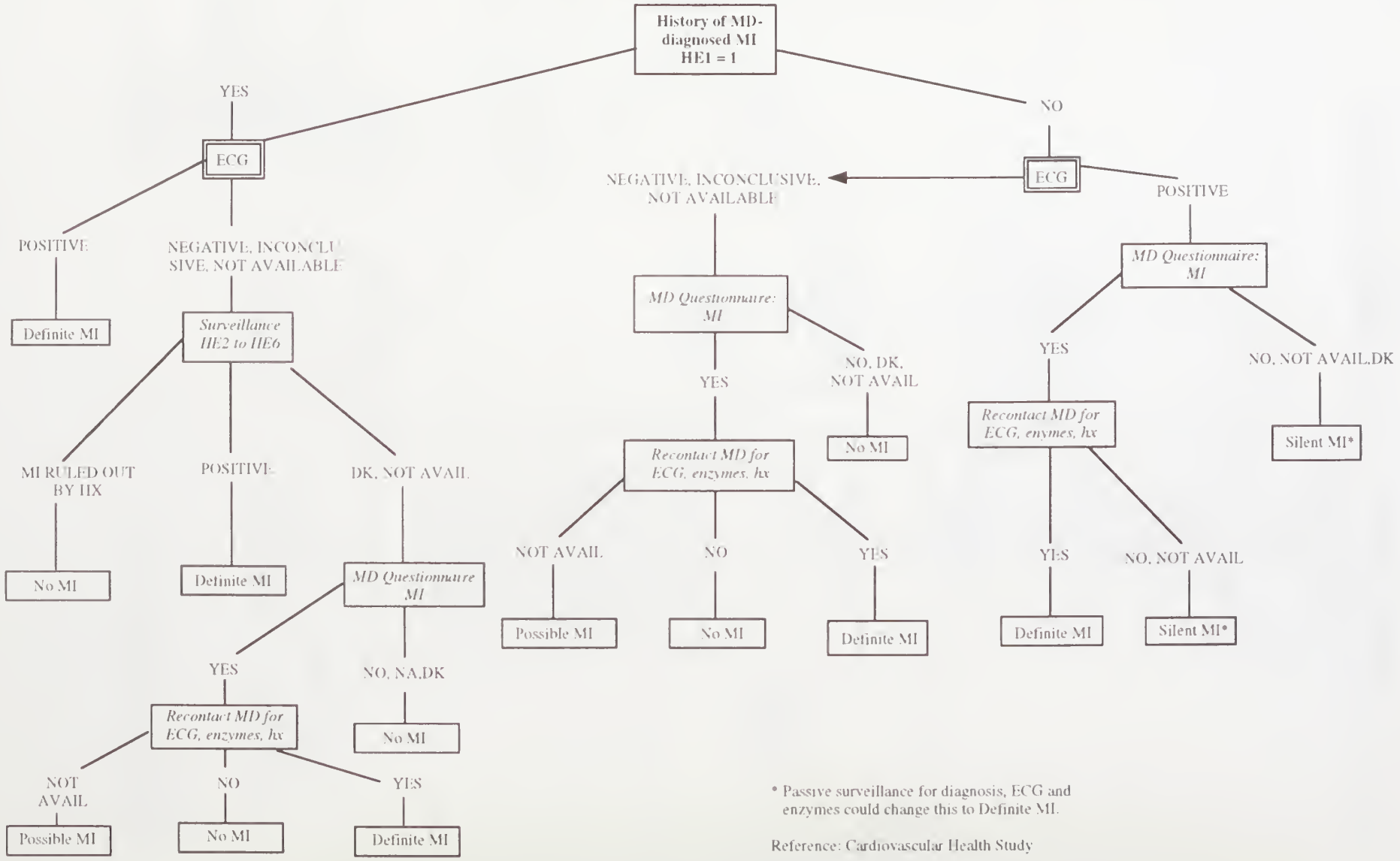
Rose G. (1962). The diagnosis of ischaemic heart pain and intermittent claudication in field surveys. *Bull WHO* 27:645-658.

Figure E.1: PREVALENT AND INCIDENT ANGINA



Reference:
Cardiovascular Health Study Manual of Operations
Rose, Bull World Health Org 1962.

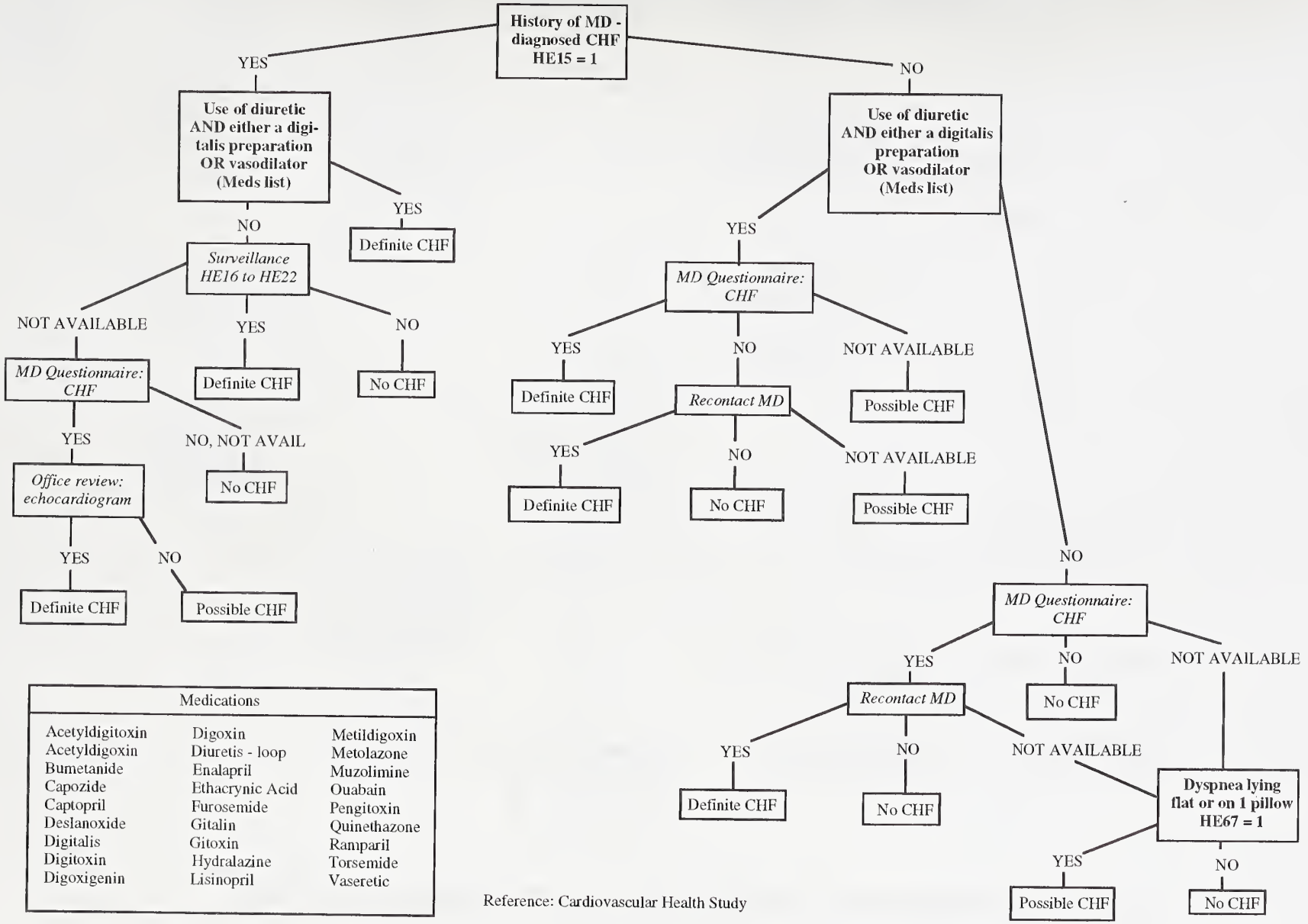
Figure E.2: PREVALENT MYOCARDIAL INFARCTION



* Passive surveillance for diagnosis, ECG and enzymes could change this to Definite MI.

Reference: Cardiovascular Health Study

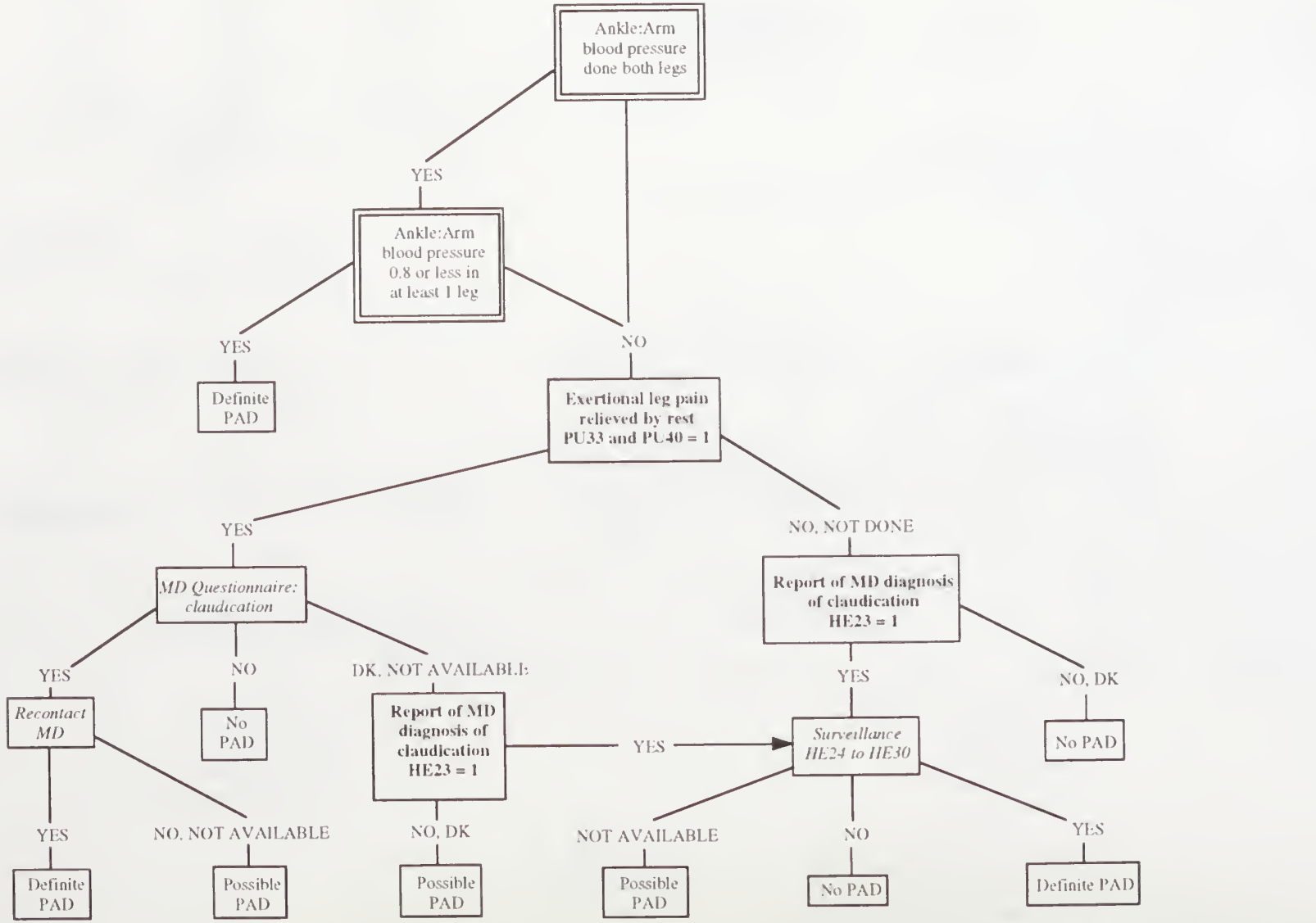
Figure E.3: PREVALENT CONGESTIVE HEART FAILURE



Medications		
Acetyldigitoxin	Digoxin	Metildigoxin
Acetyldigoxin	Diuretis - loop	Metolazone
Bumetanide	Enalapril	Muzolimine
Capozide	Ethacrynic Acid	Ouabain
Captopril	Furosemide	Pengitoxin
Deslanoxide	Gitalin	Quinethazone
Digitalis	Gitoxin	Ramparil
Digitoxin	Hydralazine	Torsemide
Digoxigenin	Lisinopril	Vaseretic

Reference: Cardiovascular Health Study

Figure E.4: PREVALENT PERIPHERAL ARTERIAL DISEASE



Reference: Cardiovascular Health Study

Figure E.5: HIP FRACTURES

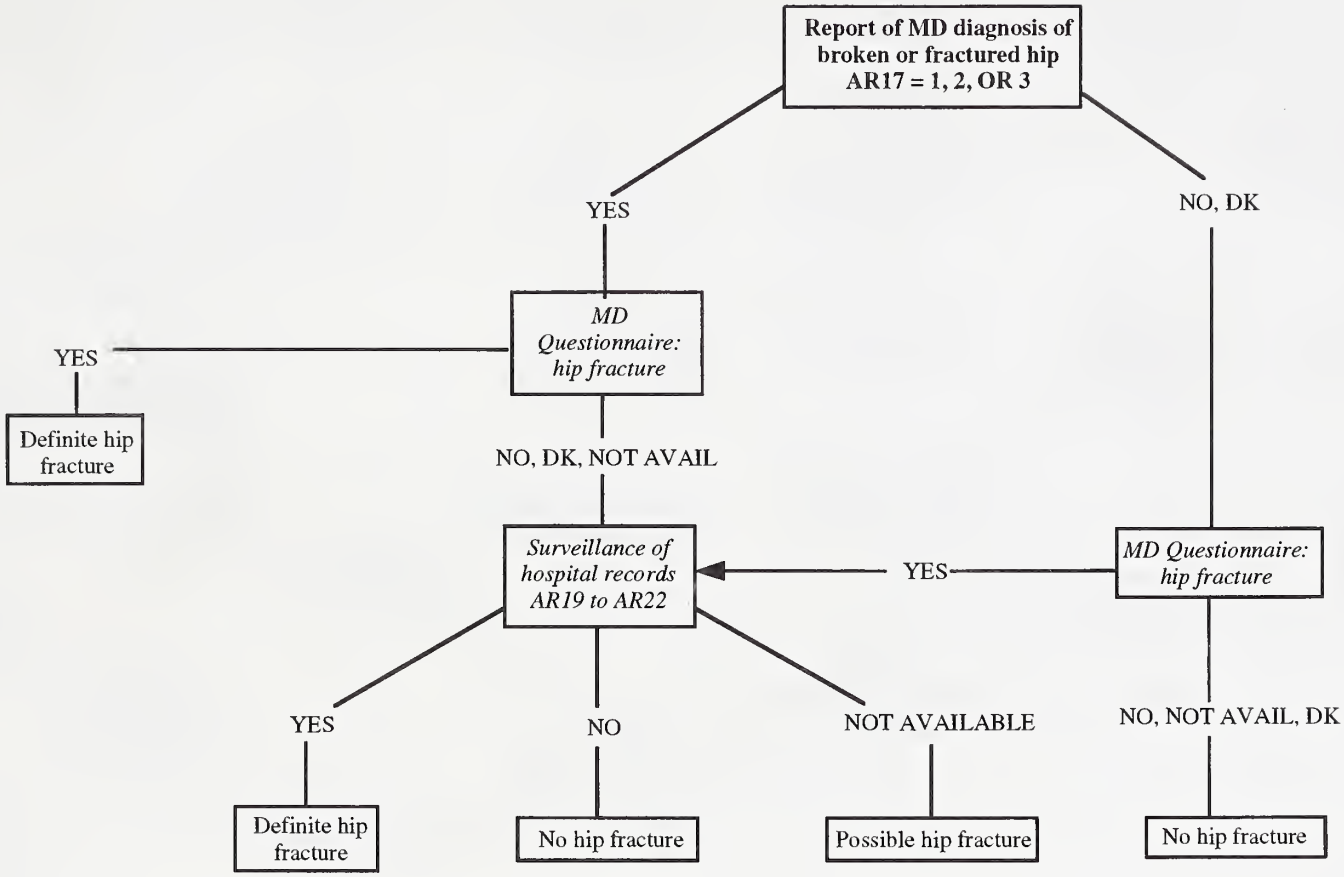
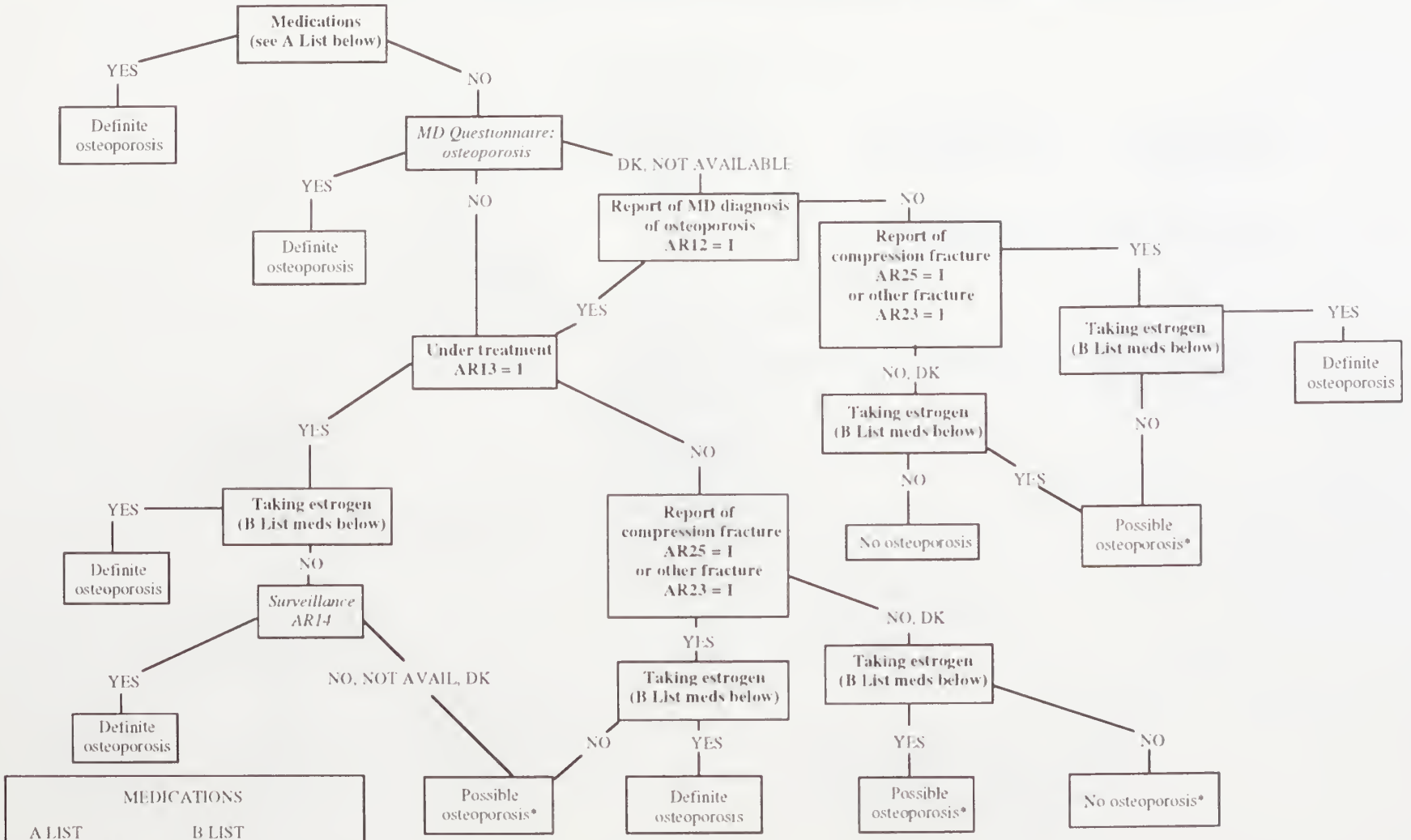
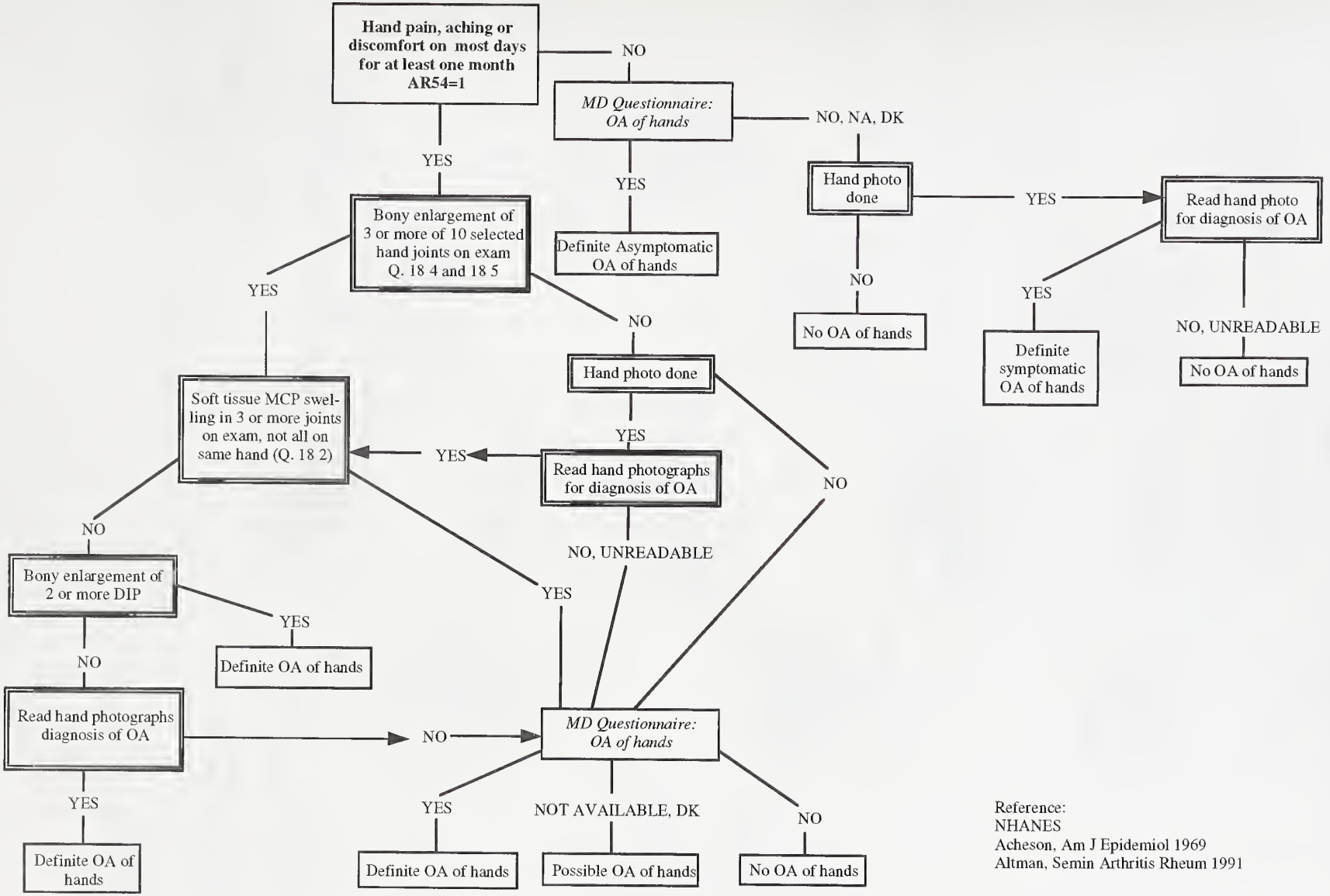


Figure E.6: PREVALENT OSTEOPOROSIS



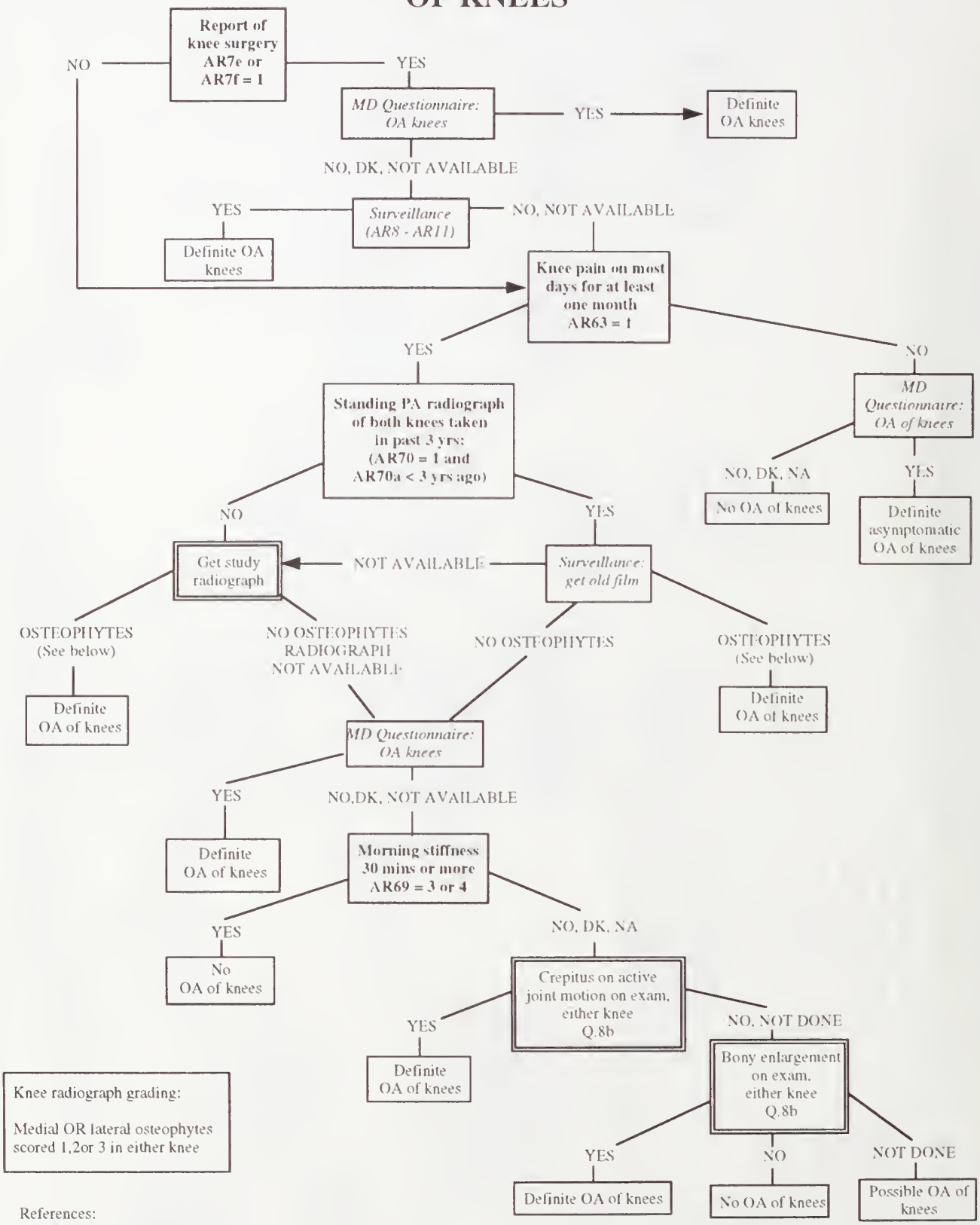
* Passive surveillance for chest or lumbar spine x-ray for vertebral fractures could change this to Definite Osteoporosis.

Figure E.7: PREVALENT SYMPTOMATIC OSTEOARTHRITIS OF HANDS



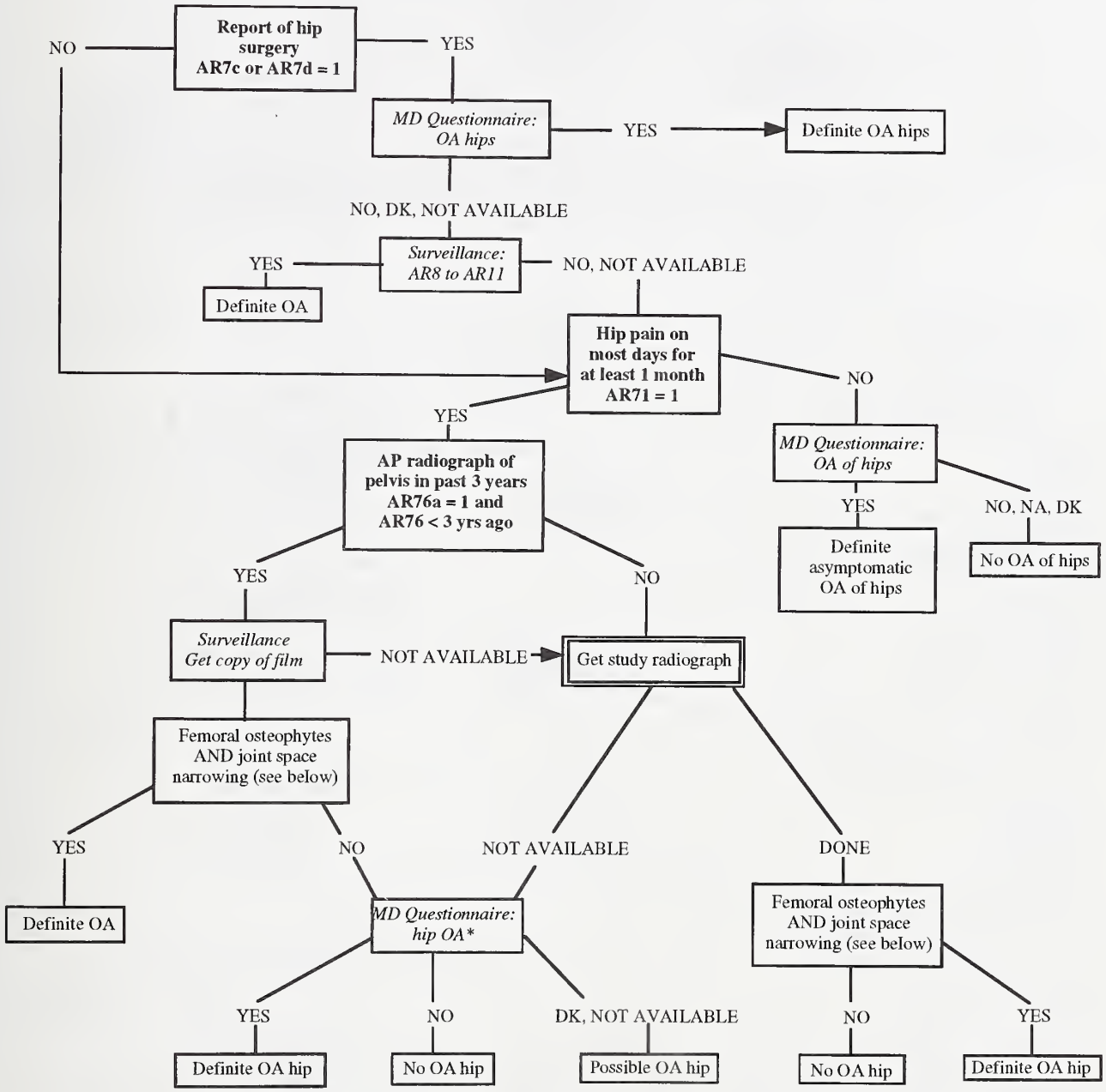
Reference:
NHANES
Acheson, Am J Epidemiol 1969
Altman, Semin Arthritis Rheum 1991

Figure E.8: PREVALENT SYMPTOMATIC OSTEOARTHRITIS OF KNEES



References:
NHANES
Altman, Semin Arthritis Rheum 1991

Figure E.9: PREVALENT SYMPTOMATIC OSTEOARTHRITIS OF HIPS

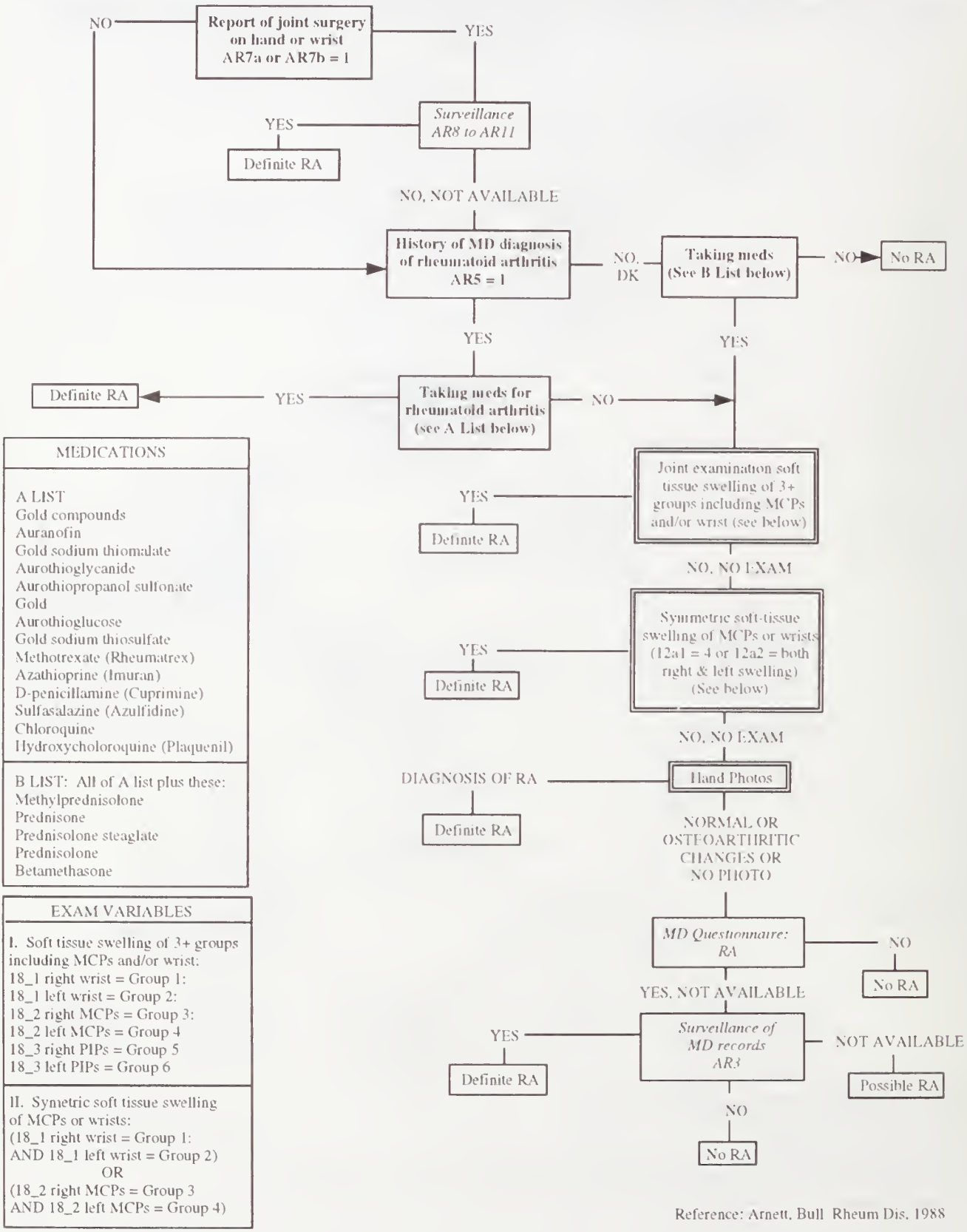


Hip radiograph scoring:
(Femoral osteophytes scored 1,2 or 3) AND
(Medial narrowing OR superior narrowing scored 1,2 or 3)
These must occur on the same side.

* MD questionnaire takes precedence, recognizing that subjects could have developed OA since surveillance x-ray was obtained.

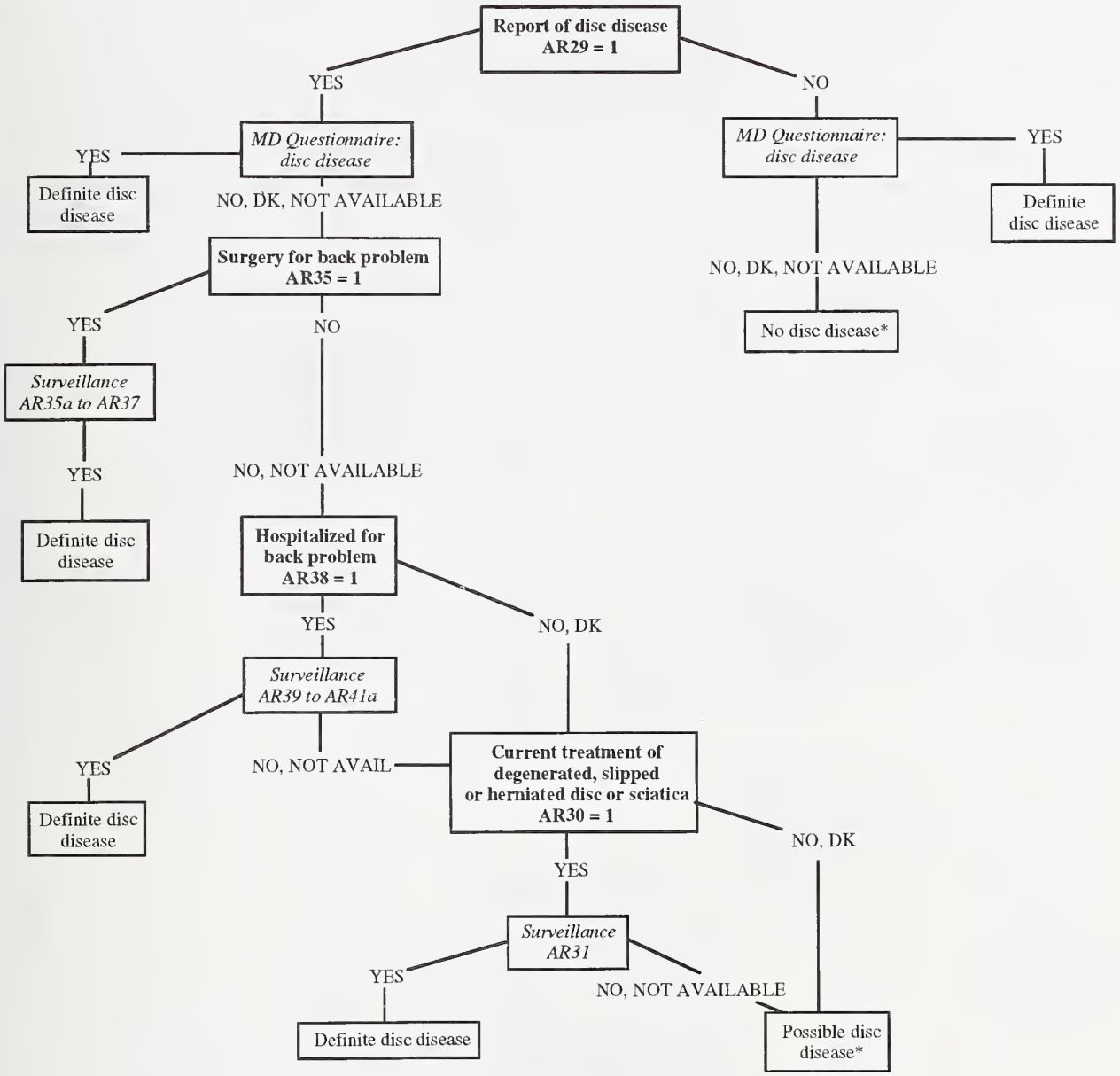
Reference:
NHANES
Altman, Semin Arthritis Rheu, 1991

Figure E.10: PREVALENT RHEUMATOID ARTHRITIS



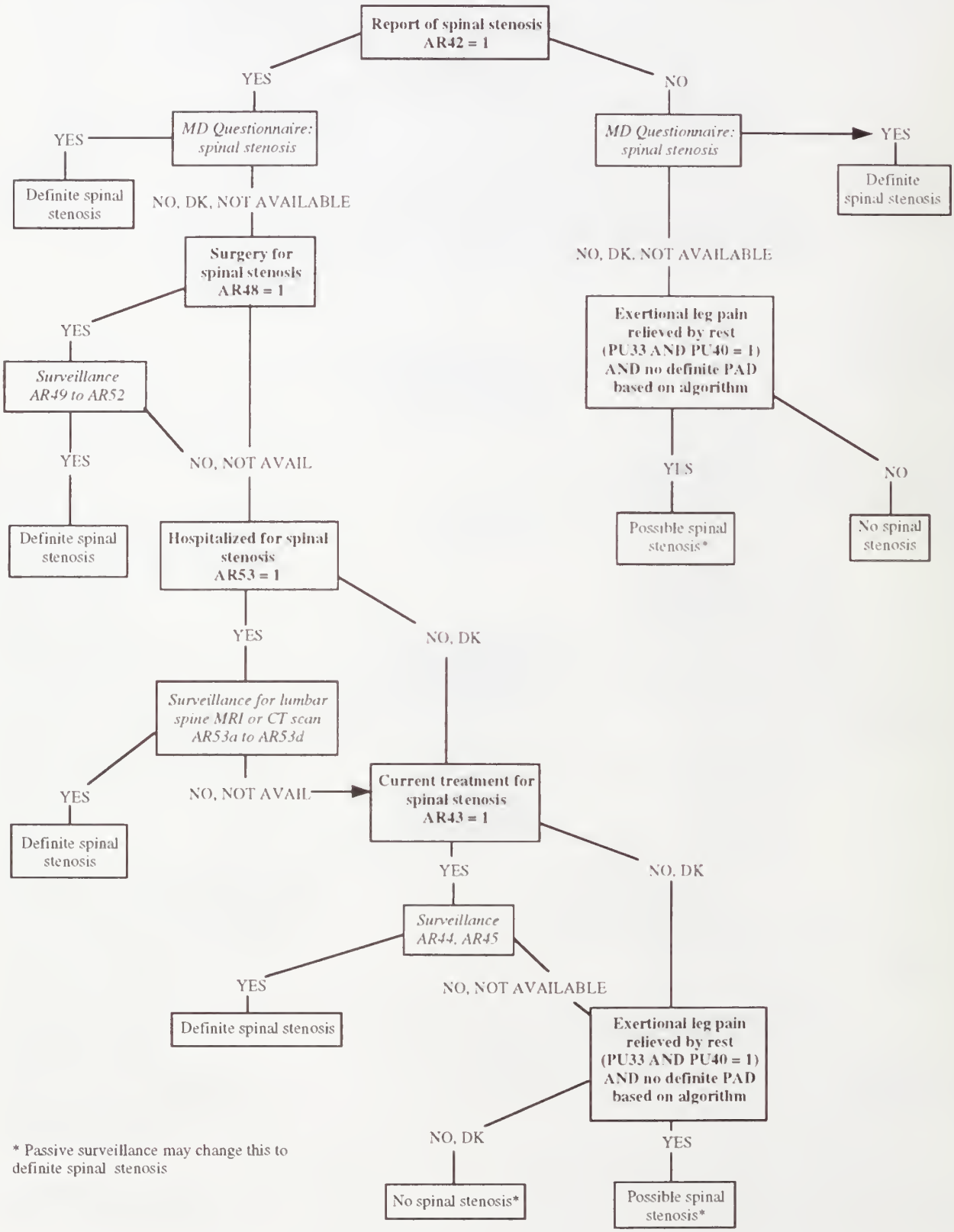
Reference: Arnett, Bull Rheum Dis, 1988

Figure E.11: PREVALENT DISC DISEASE



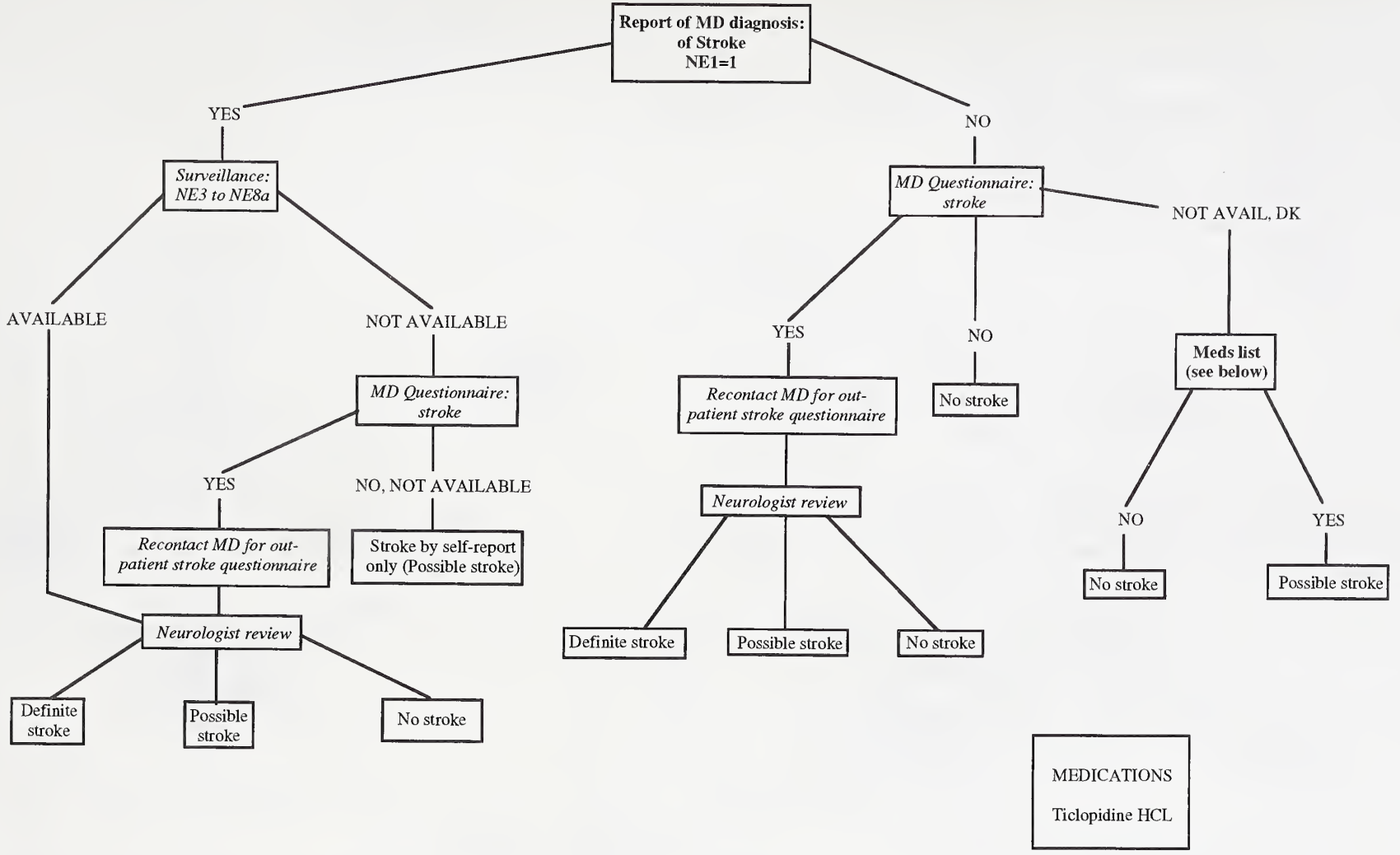
* Passive surveillance may change this to Definite Disc Disease.

Figure E.12: PREVALENT SPINAL STENOSIS



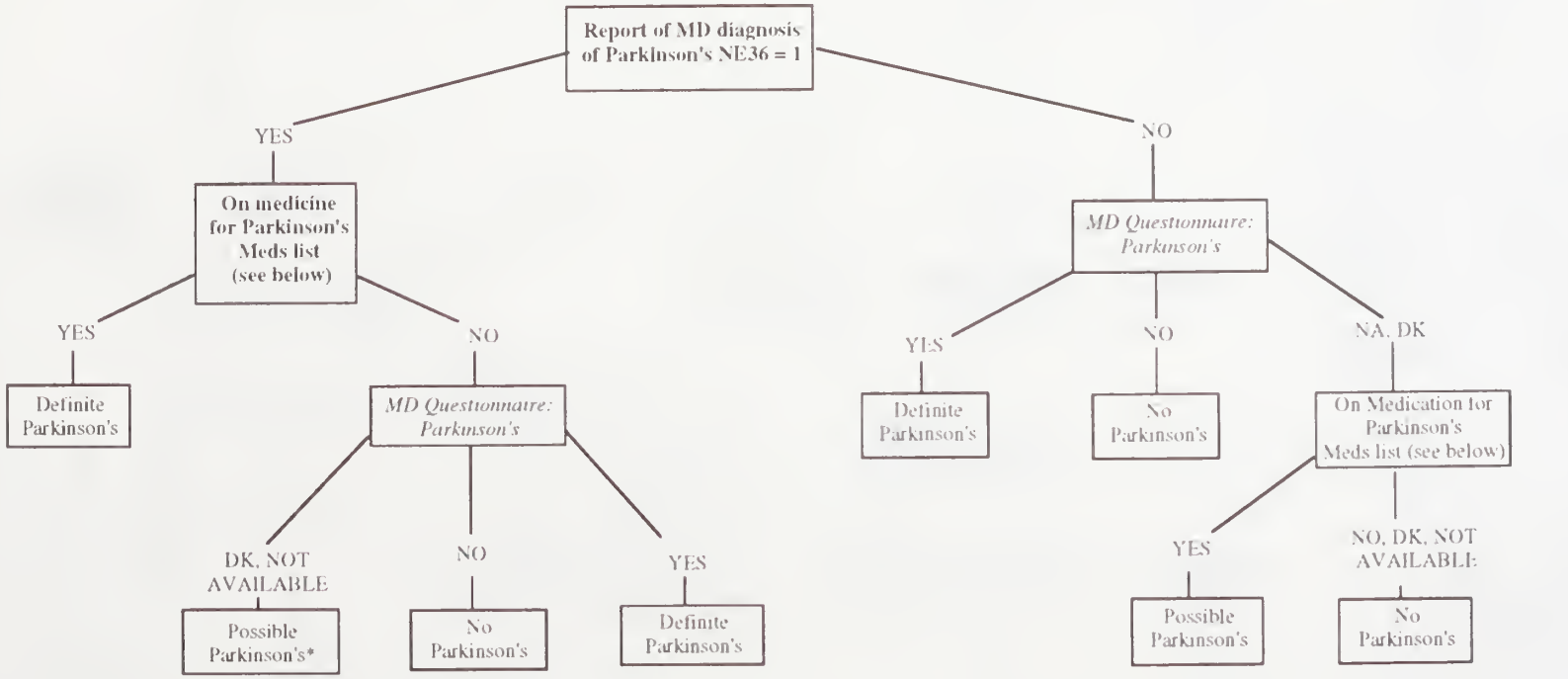
* Passive surveillance may change this to definite spinal stenosis

Figure E.13: PREVALENT STROKE



Reference: Cardiovascular Health Study

Figure E.14: PARKINSON'S DISEASE



*Passive surveillance may change this to Definite Parkinson's Disease

MEDICATIONS
Selegiline (Bidepryl) Levodopa (Larodopa) Pergolide mesylate (Permax) Carbidopa/Levodopa (Sinemet) Levodopa (Dopar)

Figure E.15: PREVALENT DIABETES MELLITUS

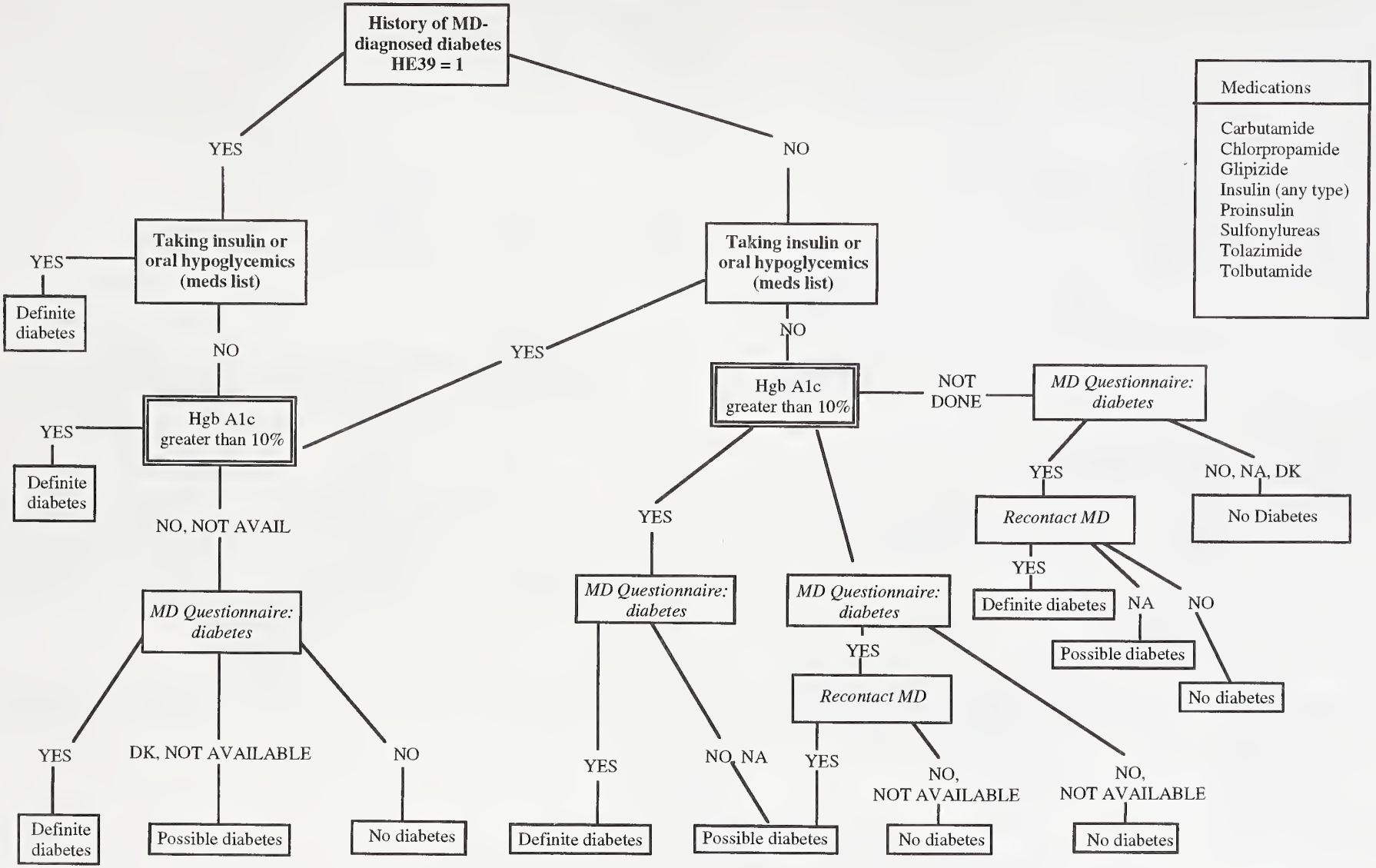


Figure E.16: PULMONARY DISEASE (page 1 of 2)

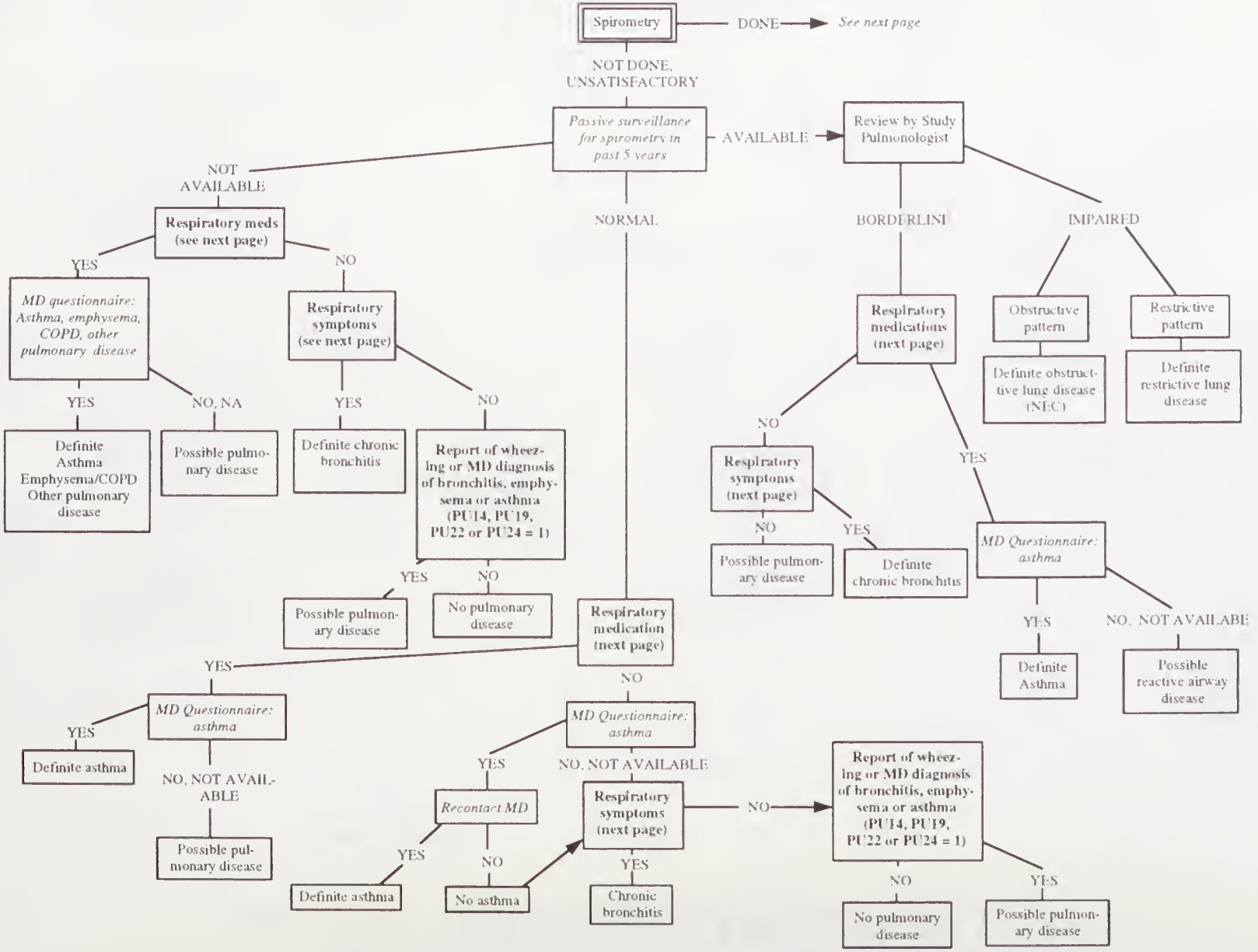
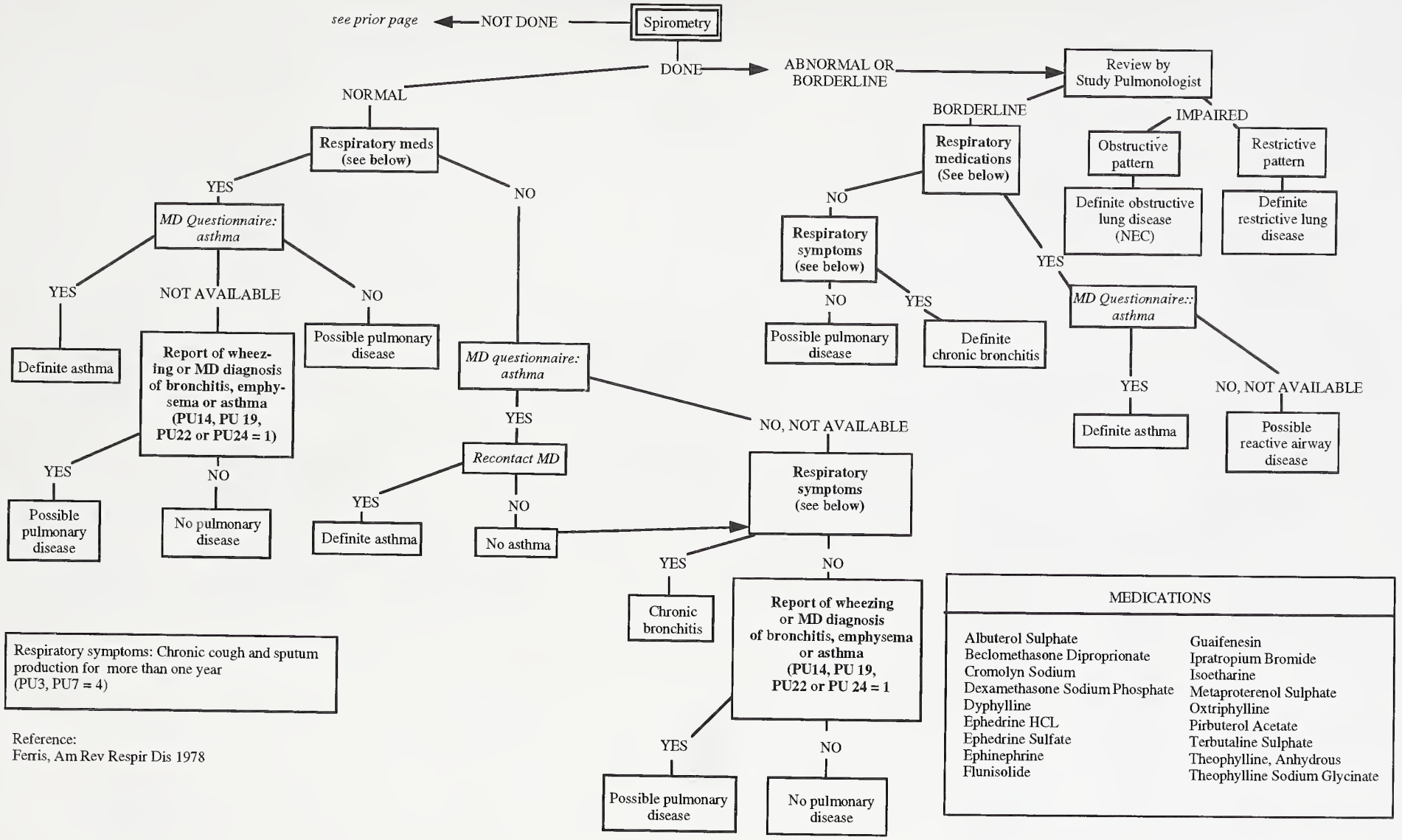


Figure E.16: PULMONARY DISEASE (Page 2 of 2)



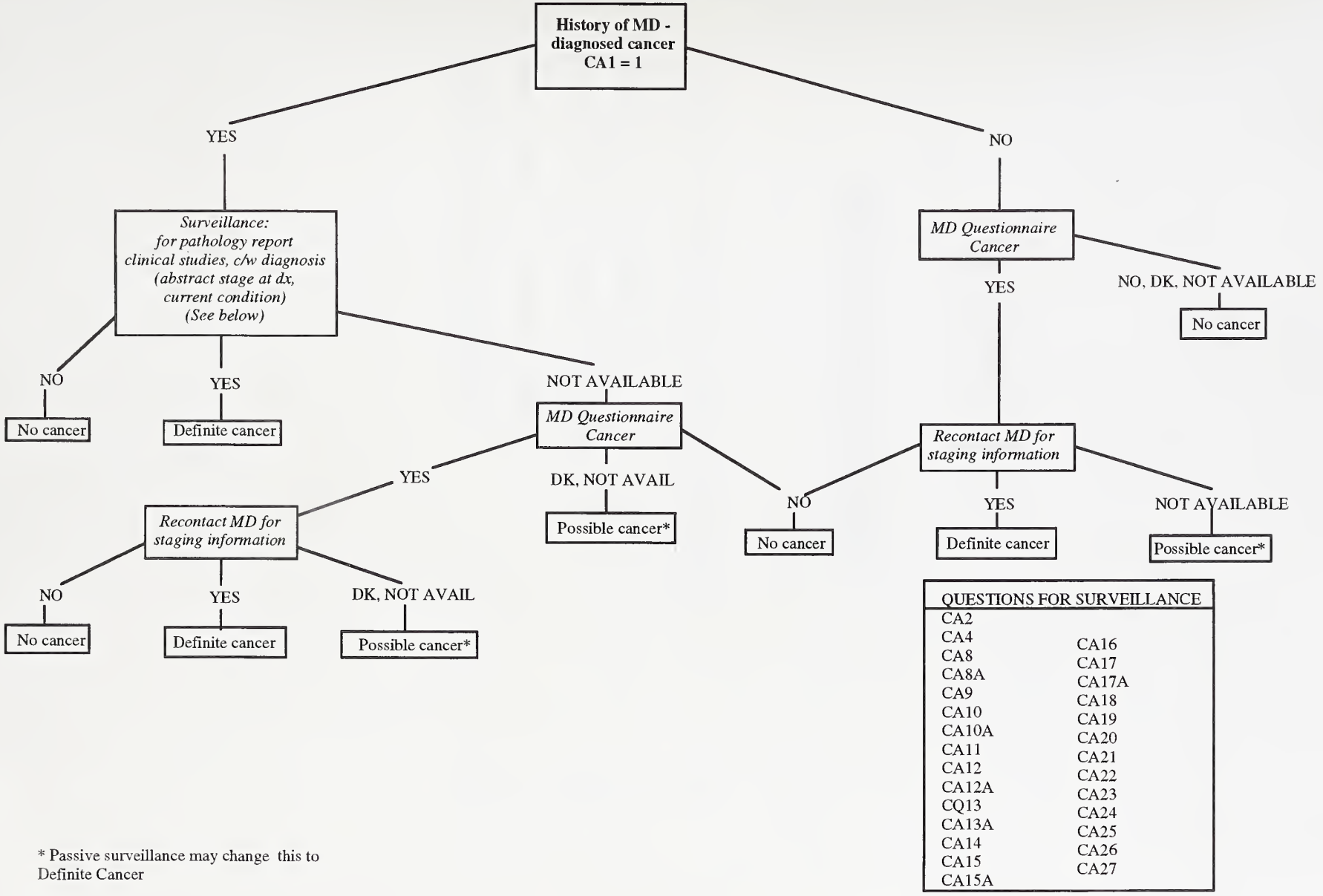
Respiratory symptoms: Chronic cough and sputum production for more than one year (PU3, PU7 = 4)

Reference:
Ferris, Am Rev Respir Dis 1978

MEDICATIONS

Albuterol Sulphate	Guaifenesin
Beclomethasone Diproprionate	Ipratropium Bromide
Cromolyn Sodium	Isoetharine
Dexamethasone Sodium Phosphate	Metaproterenol Sulphate
Dyphylline	Oxtriphylline
Ephedrine HCL	Pirbuterol Acetate
Ephedrine Sulfate	Terbutaline Sulphate
Ephinephrine	Theophylline, Anhydrous
Flunisolide	Theophylline Sodium Glycinate

Figure E.17: PREVALENT CANCER



* Passive surveillance may change this to Definite Cancer

Appendix F

Miscellaneous Forms

Women's Health & Aging Study

PHYSICIAN QUESTIONNAIRE

Patient name _____ Birthdate _____ ID No._____

Physicianname:_____

1. Are you the primary care physician for this patient? ☐ No ☐ Yes

2. What is your specialty?_____

3. Please indicate on the scale how you would classify this patient with regard to frailty:

☐ Very Frail ☐ Frail ☐ Normal ☐ Robust/Hardy ☐ Don't Know

	To your knowledge, does this patient have this condition now?	If the condition is present, how severe is it? 1 = Mild 2 = Moderate 3 = Severe	What was the date (year) of diagnosis for this condition?
Cancer *Specify site:*_____ *TNM Classification:*_____	No Yes Don't know	1 2 3	19_____
Diabetes	No Yes Don't know	1 2 3	19_____
Cardiovascular disease			
Hypertension	No Yes Don't know	1 2 3	19_____
Angina	No Yes Don't know	1 2 3	19_____
Myocardial infarction	No Yes Don't know	1 2 3	19_____
Congestive heart failure	No Yes Don't know	1 2 3	19_____
Peripheral vascular disease	No Yes Don't know	1 2 3	19_____
Pulmonary Disease			
COPD (chronic bronchitis, emphysema)	No Yes Don't know	1 2 3	19_____
Asthma	No Yes Don't know	1 2 3	19_____
Other pulmonary disease *(specify):* _____	No Yes Don't know	1 2 3	19_____

	To your knowledge, does this patient have this condition now?	If the condition is present, how severe is it? 1 = Mild 2 = Moderate 3 = Severe	What was the date (year) of diagnosis for this condition?
Musculoskeletal disease			
Rheumatoid arthritis	No Yes Don't know	1 2 3	19_____
Osteoarthritis of hips	No Yes Don't know	1 2 3	19_____
Osteoarthritis of knees	No Yes Don't know	1 2 3	19_____
Osteoarthritis of hands	No Yes Don't know	1 2 3	19_____
Osteoporosis	No Yes Don't know	1 2 3	19_____
Fracture of hip	No Yes Don't know		19_____
Fracture of upper or lower extremity	No Yes Don't know		19_____
Vertebral compression fracture	No Yes Don't know	1 2 3	19_____
Degenerated, slipped or herniated disc	No Yes Don't know	1 2 3	19_____
Spinal stenosis	No Yes Don't know	1 2 3	19_____
Neurologic Disorders			
Stroke	No Yes Don't know	1 2 3	19_____
Parkinson's Disease	No Yes Don't know	1 2 3	19_____
Peripheral neuropathy	No Yes Don't know	1 2 3	19_____
Other significant disease *(Please list)*		1 2 3	
_____		1 2 3	19_____
_____		1 2 3	19_____
_____		1 2 3	19_____
_____		1 2 3	19_____
		1 2 3	19_____

Please return to:

Women's Health & Aging Study
The Johns Hopkins Medical Institutions
2024 E. Monument, Suite 2-600
Baltimore, Maryland 21205

Phone: 550-5495
Fax: 614-9225

WOMEN'S HEALTH AND AGING STUDY
MEDICAL RECORD ABSTRACT

Hospital:

(4) Name:

Address:

Code:

(5) Attending MD:

Pt. name:

I.D. #

(1) Admission

(2) Discharge

(3) Alive Dead Transfer

Reason Abstract not completed: _____

_____

(7) When no H&P, D/S describe acute events/sx's leading to admission include time sequence and course of out-of-hospital symptoms - use comment section.

(8) Diagnostic codes	(9) Description	(12) Further Abs. required
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(10) Procedure codes	(11) Description
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(13) Adm. Dx: code _____ Description _____

(14) ICU Stay: Yes No

(15) Complications

Sepsis/Septic shock	Y	N	DK
Pneumonia/Pneumonitis	Y	N	DK
Urinary Tract Infection	Y	N	DK
Decubitus ulcers	Y	N	DK
Deep Vein Thrombosis	Y	N	DK
Pulmonary Embolus	Y	N	DK
Upper GI Bleed	Y	N	DK
Lower GI Bleed	Y	N	DK
Fall in Hospital	Y	N	DK
Injury in Hospital	Y	N	DK
Delirium	Y	N	DK
Stroke	Y	N	DK
Surgical Complications	_____		

(16) Therapies/Procedures

Heparin	Y	N	DK
Coumadin	Y	N	DK
IV Pressors	Y	N	DK
IV Vasodilators	Y	N	DK
IV Antiarrhythm	Y	N	DK
Swan Ganz	Y	N	DK
Intubation/Vent	Y	N	DK
Foley Cath	Y	N	DK
Radiation Tx	Y	N	DK
Chemotherapy	Y	N	DK

(17) Closed Chest massage Y N DK

(18) Cardioverted Y N DK

(19) Rhythm(s) present prior to cardioversion_____

(20) Past medical history

MI Date____	Y	N	DK	Angina/IHD	Y	N	DK
Valvular Dis	Y	N	DK	CHF	Y	N	DK
At Fib/Flutter	Y	N	DK	Vent Tach	Y	N	DK
CVA Date____	Y	N	DK	TIA	Y	N	DK
Syncope	Y	N	DK	Claudication	Y	N	DK
LE bypass/Amp	Y	N	DK	CABG	Y	N	DK
CP Resus	Y	N	DK	Cardiac Arrest	Y	N	DK
Thrombolytic Tx	Y	N	DK	CA Site_____	Y	N	DK
Fall	Y	N	DK	Injuries	Y	N	DK
Fx hip	Y	N	DK	Other FX >50	Y	N	DK
CRF	Y	N	DK	Hypothyroidism	Y	N	DK
Spinal stenosis	Y	N	DK	Emphysema	Y	N	DK
Rheum Arthritis	Y	N	DK	DM retinopathy	Y	N	DK
Retinal Hemmor	Y	N	DK	Blindness/DM	Y	N	DK
Laser Tx retina	Y	N	DK	Parkinson Dis	Y	N	DK
Osteoporosis	Y	N	DK	Diabetes	Y	N	DK

Death

(21) Deceased Yes No (22) Found dead Yes No DK

(23) Time period prior to death pain free Time period_____

(24) Episode of C.P. within 72hr of death Yes No DK Comatose

(25) After development of C.P., pt died Time Period_____

(26) Terminal complication non C-V Disease Yes No DK

Acute Cardiovascular Events

(27) Episode of pain Yes No DK (28) Onset prior to Adm Yes No DK

(29) Given nitrates/NTG Yes No DK (30) Pain relieved Yes No DK

(31) Pain return Yes No DK (32) Record date _____

(33) Any episode within 6 wks. PTA last >20 minutes Yes No DK

(34) Most recent Episode >20 min: Date_____ Time_____ Duration_____

(35) Duration of longest episode _____

CHF

(36) Adm w/CHF or developed during Adm Yes No DK

(37) Sx's PTA or during stay:

Night cough	Y	N	DK	Productive cough	Y	N	DK
Dyspnea at rest	Y	N	DK	Dyspnea mild/mod exert	Y	N	DK
Dyspnea extreme	Y	N	DK	PND	Y	N	DK
Orthopnea	Y	N	DK	SOB NOS	Y	N	DK

(38) Physician reported condition:

Neck:	Neck vein distention/JVD	Yes	No	DK
	Carotid bruit	Yes	No	Dk
Lung:	Basilar rales/crackles only	Yes	No	DK
	Rales/crackles above bases	Yes	No	DK
	Wheezing	Yes	No	DK
Cardiac:	S-3 gallop	Yes	No	DK
	Murmur	Yes	No	DK
Abdominal:	Hepatojugular reflux	Yes	No	DK
	Hepatomegaly	Yes	No	DK
Extremities:	Peripheral/ankle edema	Yes	No	DK

(39&40) On Admission: Blood Pressure _____ Heart Rate _____

(41) Meds during 1st 48 hrs of Adm or Dx:

Diuretics	Yes	No	DK	Digitalis	Yes	No	DK
Oxygen	Yes	No	DK	Nitroglycerine	Yes	No	Dk
ACE inhibitor	Yes	No	DK	Other Vasodilators	_____		

Chest X-ray

(42) Chest xray taken Yes No DK

(43) 1st CXR following Adm. or Dx of CHF findings:

Pulmonary edema	Yes	No	DK	CHF	Yes	No	DK
Pleural effusion	Yes	No	DK	Cardiomegaly	Yes	No	DK
Metastasis	Yes	No	DK	Compression fx	Yes	No	DK
Flow redistribution	Yes	No	DK	Atelectasis	Yes	No	DK
COPD	Yes	No	DK	Pneumonia	Yes	No	DK

Electrocardiogram

(44) Electrocardiogram recorded Yes No DK

Serum Enzymes

(45) Cardiac Enzymes performed Yes No DK

(46) Total CK w/in 72hr of Adm/Sx Yes No DK

(47) CK-MB w/in 72hr of Adm/Sx Yes No DK

(48) LDH w/in 72hr of Adm/Sx Yes No DK

(49) Active liver disease Yes No DK Specify _____

(50) Trauma during 7d PTA Yes No DK Specify _____

(51) Surg. Proc. of muscle cutting/GA Yes No DK Specify _____

Angina

(52) Stress test performed Yes No DK Attach copy

(53) Angiography performed Yes No DK Attach copy

Spinal Stenosis/Disc Disease

(54) CT/MRI performed Yes No DK Attach copy

Spirometry

(55) Spirometry performed Yes No DK Attach copy

Cancer

(56) Dx of Cancer Yes No DK

(58) Stage of Disease @ D/C _____

(59) Path report Yes No DK Attach copy

Back Disorder

(60) Adm w/ disc disease, sciatica, Spinal Stenosis	Yes	No	DK	
(61) L-Spine xray	Yes	No	DK	Attach copy
(62) CT Spine	Yes	No	DK	Attach copy
(63) MRI Spine	Yes	No	DK	Attach copy
(64) Surgical Procedure	Yes	No	DK	Attach op note

Stroke

(57&65) Post Discharge Follow-Up MD _____

_____

(66) Medications @ D/C _____

_____

_____

_____

_____

Comments:

_____

_____

_____

_____

_____

_____

_____

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_____

Abstractor _____

Date _____

Women's Health and Aging Study
Medical Record Abstract-Instruction Sheet

ELEMENT	***INSTRUCTION***
12. Further abstraction required	12. A. Cardiac Disease: ICD-9-CM Codes 410, 411, 413, 414,425, 427.4, 427.5, 428 B. Stroke/TIA: ICD-9-CM Codes 430, 431, 432, 433, 434, 435, 436, 437, 438 C. Cancer: ICD-9-CM Codes 140 through 239 D. Back Disorder: ICD-9-CM Codes 721, 722, 724
13. Admitting Diagnosis	13. ICD-9-CM Code and Description
14. Was the patient treated in any Intensive Care Unit during this hospitalization	14. Yes/No; Number of Days
15. During this hospitalization did the patient develop any of the following complications	15. Diagnosis of complications must have occurred at least 24 hours after admission: Sepsis/septic shock — Pneumonia/pneumonitis Urinary Tract Infection — Decubitus Ulcers Deep Vein Thrombosis — Pulmonary Embolus Upper GI Bleed — Lower GI Bleed Fall/Injury in Hospital — Stroke Delirium — Surgical Complications
16. During this hospitalization did the patient receive any of the following therapies/procedures	16. Heparin (except to keep IV line open) Coumadin (Warfarin) IV Pressors IV Vasodilators IV Antiarrhythmics Swan Ganz Catheter for hemodynamic monitoring Intubation/Mechanical Ventilation Indwelling Foley Catheter Radiation Therapy Chemotherapy
17. Was closed Chest Massage administered	17. Yes/No
18. Was cardioversion given	18. Yes/No; If no or DK Skip to Q.20
19. What rhythm(s) were present prior to conversion	19. Ventricular Fibrillation/Flutter Atrial Fibrillation/Flutter Ventricular Tachycardia Asystole Complete AV Block (3 HB) Other, Specify Unknown/not documented

ELEMENT	INSTRUCTION
20. Is there a past medical history of the following conditions/procedures/medications prior to admission	20. Myocardial Infarction (include date of most recent) Angina Pectoris, Coronary Insufficiency, or other Chronic Ischemic Heart Disease CHF or Congestive Cardiomyopathy Atrial Fibrillation/Flutter Ventricular Tachycardia Stroke (CVA) include date of most recent TIA Syncope Intermittent claudication or other Peripheral Vascular Disease Lower extremity bypass, angioplasty or amputation secondary to Peripheral Vascular Disease Coronary Bypass Surgery Cardiopulmonary Resuscitation Cardiac Arrest Thrombolytic Therapy Cancer include site Fall/Injuries other than fracture Fracture of the Hip Other fracture after age 50, include site Chronic Renal Failure Hypothyroidism Spinal Stenosis Emphysema/COPD Rheumatoid Arthritis Proliferative Diabetic Retinopathy Retinal Hemorrhage Diabetes/Blindness/Visual Impairment due to Diabetic Eye Disease Photocoagulation (Laser) treatment of retina Parkinson Disease Osteoporosis
DEATHS	
21. What was the patient's vital status at discharge	21. Alive Skip to Q. 27/Dead
22. Was the patient found dead	22. i.e., not observed at the moment of death. If expired in ICU/CCU, code No. If No/DK Skip to Q.24
23. What was the shortest period of time prior to death that participant was observed to be free from chest, left arm or jaw pain	23. Time periods: Less than 5 minutes 5 minutes to 1 hour 1 to 24 hours after start of symptoms More than 24 hours DK/Not stated
24. Was there an episode of chest, left arm or jaw pain during the 72 hours prior to death	24. Yes, No, Comatose, DK/not stated- Skip to Q26

ELEMENT	INSTRUCTION
25. Following development of chest, left arm or jaw pain the patient died	25. Time Periods: Less than 5 minutes after start of symptoms 5 minute to 1 hour after start of symptoms 1 to 24 hours More than 24 hours after start of symptoms DK/Not stated
26. Did a physician document the death as a terminal complication of a non-cardiovascular disease	26. Yes/No/DK/not stated
ACUTE CARDIOVASCULAR EVENTS	
27. Was there an acute episode of pain, discomfort or tightness in the chest, left arm, or jaw	27. Yes No DK/not stated - Skip to Q.36
28. Did the onset of the acute episode occur prior to admission	28. Yes No/DK/not stated - Skip to Q. 32
29. Did the participant take or was she given nitrates or nitroglycerine for these symptoms	29. Yes No/DK/not stated - skip to Q.32
30. Was the pain relieved by the nitrates	30. Yes/No/DK/not stated
31. Did the pain return	31. Yes/No DK/not stated
32. Record the date and time of first onset of pain	32. If exact time unknown: Midnight to 6 AM 6 Am to Noon Noon to 6 PM 6 PM to Midnight DK/not stated
33. Did any pain episode within the six weeks prior to admission last 20 minutes or longer	33. Yes No/DK/not stated- skip to Q. 36
34. For the most recent episode that lasted 20 minutes or longer, record the date/time/duration	34. If exact time unknown: Midnight to 6 AM 6 Am to Noon Noon to 6 PM 6 PM to Midnight DK/not stated
35. What was the duration of the longest episode	35. Hours/Minutes

ELEMENT	INSTRUCTION
CONGESTIVE HEART FAILURE (CHF)	
36. Was the participant admitted with CHF, or did CHF develop during the hospitalization	36. Yes No/DK/not stated - Skip to Q. 42
37. Did the participant have any of the following symptoms immediately prior to admission, or did the symptoms develop during the hospitalization	37. Symptoms: Night Cough Productive Cough Dyspnea at rest Dyspnea on mild/moderate exertion-walking on level Dyspnea on extreme exertion Dyspnea Orthopnea-Dyspnea NOS/Shortness of Breath
38. Did a physician report any of the following conditions	38. Neck: Neck vein distention (jugular venous distention/JVD) Lung: Basilar rales or crackles only Rales or crackles above bases Wheezing Cardiac: S-3 gallop Cardiac murmur Abdominal: Hepatojuglar reflux Hepatomegaly Extremities: Peripheral/ankle edema
39. Blood pressure at admission	
40. Heart rate at admission	
41. Did the participant receive any of the following medications during the first 48 hours following hospitalization or diagnosis of CHF	41. Medications: Diuretics Digitalis Oxygen Nitroglycerine Angiotensin-converting enzyme inhibitor Other Vasodilators specify
CHEST X-RAY	
42. Was a chest x-ray done during this admission	42. Yes- Attach copy No/DK/not stated - Skip to Q. 44
43. On the first chest-X-ray done following admission (or following diagnosis of CHF, were any of the following findings reported	43. Findings: Pulmonary venous congestion or pulmonary edema Congestive Heart Failure Pleural Effusion Cardiomegaly/Cardiothoracic ratio > 0.50 Metastatic lesions/nodules Vertebral compression fracture Upper zone flow redistribution Atelectasis COPD/Emphysema

ELEMENT	INSTRUCTION
ELECTROCARDIOGRAMS	
44. Were EKG's (ECG's) recorded	44. Yes No/DK/not stated-Skip to Q. 45 - If participant was discharged alive and Q. 27 (acute chest pain) = No/DK and Q. 36 (CHF) = No/Dk, complete Chart A. No copies of ECG's are required. - When participant was discharged alive and Q.27 = yes or Q. 36 = yes (MI,angina, or CHF), or if participant died during admission, complete Chart A and make 2 copies of ECGs as described below: - Attach copies of 3 tracings - If 3 or fewer tracings were made, include all tracings - If more than 3 tracings were made, include: 1) First codable tracing 2) Last codable tracing prior to discharge or death (discharge tracing) 3) Last codable tracing recorded on day 3 (or first tracing thereafter) following an admission or in-hospital event NOTE: If only 2 ECG's are obtained using the above criteria, obtain a third by copying the tracing immediately preceding the "discharge tracing" - If the participant is readmitted (transferred) to ICU/CCU because of a new episode of chest pain, also copy the first codable tracing recorded after transfer - Make 2 copies of each ECG specified above
SERUM ENZYMES	
45. Were serum cardiac enzyme measurements performed during admission	45. Yes-Complete Chart B. No/DK/not stated -Skip to Q.50
46. Was Total CK measured within 72 hours after onset of acute symptoms	46. Yes/No/DK/not stated
47. Was CK-MB-measured within 72 hours after admission or after onset of acute symptoms	47. Yes/No/DK/not stated
48. Was LDH measured within 72 hours after admission or after onset of acute symptoms	48. Yes/No/DK/not stated
49. Did the participant have active liver disease (cirrhosis, hepatitis, liver cancer, etc.)	49. Yes -Specify No/DK/not stated
50. Was there trauma (severe injury) during the 7 days prior to admission	50. Yes-Specify No/DK/not stated
51. Did the participant have any surgical procedure this admission involving muscle cutting and/or general	51. Yes-Specify Date/Procedure No/DK/not stated

ELEMENT	INSTRUCTION
ANGINA	
52. Was a stress test done	52. Yes-Attach copy No/Unknown/not stated
53. Was angiography performed	53. Yes-Attach copy No/Unknown/not stated
SPINAL STENOSIS/DISC DISEASE	
54. Was a CT scan or MRI of the lumbar spine performed	54. Yes-Specify CT or MRI; Attach copy No/Unknown/not stated
SPIROMETRY	
55. Was spirometry (PFT) performed	55. Yes-Attach copy No/Unknown/not stated
CANCER	
56. Was there a diagnosis of cancer	56. Yes/No
57. Post discharge follow-up care source	
58. Stage of disease at discharge	
59. Photocopies of pathology report	59. Yes-Number of reports No-explain
BACK DISORDER	
60. Was participant admitted with either intervertebral disc disease, sciatica, or spinal stenosis	60. Yes/No
61. Was a lumber spine x-ray done during this admission	61. Yes-Attach copy No
62. Was a CT scan done during this admission	62. Yes-Attach copy No
63. Was a MRI scan done during this admission	63. Yes-Attach copy No
64. Did the patient have a surgical procedure on her back during this admission	64. Yes-Attach copy No

ELEMENT	INSTRUCTION
STROKE	
65. Post Discharge follow-up care source	65. Obtain admission and discharge notes from Rehab hospital post stroke and last notes by OT and PT
66. Medications at discharge	
67. Attach photocopies	67. Copies Attached: All cases: Admission History and Physical Discharge Summary Chest X-ray Report Certain Cases: ECGs-See Q.44 Stress Test Report-See Q. 52 Angiography-See Q. 53 CT/MRI Lumbar spine- See Q. 54 Cancer Pathology Report- See Q.59 Neurology-Admission notes by Housestaff and Attendings If patient not admitted to Neurology Service, copy all Neuro Consultant notes for last 3 days Final OT and PT notes All CT/MRIs EMG/NCS

Study Number __ __ __ __ __ __ __ __

Date film taken __ __ / __ __ / __ __

Osteoarthritis Grading Sheet

KNEE X-RAY

	RIGHT KNEE	LEFT KNEE
Kellgren-Lawrence	0 1 2 3 4 9	0 1 2 3 4 9
Osteophytes		
Medial	0 1 2 3 9	0 1 2 3 9
Lateral	0 1 2 3 9	0 1 2 3 9
Narrowing		
Medial	0 1 2 3 9	0 1 2 3 9
Lateral	0 1 2 3 9	0 1 2 3 9
Sclerosis		
Medial	0 1 9	0 1 9
Lateral	0 1 9	0 1 9
Tibial spines - sharpening	0 1 9	0 1 9
Chondrocalcinosis	0 1 9	0 1 9
Varus	0 1 9	0 1 9
Valgus	0 1 9	0 1 9
Old trauma	0 1 9	0 1 9

Comments:_____

_____

_____

Reader's initials _____

Date read __ __/__ __/__ __

Study Number _ _ _ _ _ _ _ _

Date film taken _ _ / _ _ / _ _

Osteoarthritis Grading Sheet

HIP X-RAY

	RIGHT HIP	LEFT HIP
Kellgren-Lawrence	0 1 2 3 4 9	0 1 2 3 4 9
Osteophytes		
Acetablular	0 1 2 3 9	0 1 2 3 9
Femoral	0 1 2 3 9	0 1 2 3 9
Narrowing		
Medial	0 1 2 3 9	0 1 2 3 9
Superior	0 1 2 3 9	0 1 2 3 9
Sclerosis	0 1 9	0 1 9
Chondrocalcinosis	0 1 9	0 1 9
Deformity of femoral head	0 1 9	0 1 9

Comments:_____

_____

_____

Reader's initials _____

Date read _ _/_ _/_ _

Women's Health and Aging Study

HAND PHOTO EVALUATION

Participant ID _____

Rater ID _____

Date read _____

CODES:
0 = Absent
1 = Present
8 = Amputated joint
9 = Unreadable

If normal hand (box checked at bottom, chart does not have to be filled in. If <u>any</u> abnormalities, fill in all of chart.

		LEFT HAND			RIGHT HAND		
		Soft tissue	Bony prom	Deform-ity	Soft tissue	Bony prom	Deform-ity
Thumb	IP						
	MCP						
	CMC						
2nd	DIP						
	PIP						
	MCP						
3rd	DIP						
	PIP						
	MCP						
4th	DIP						
	PIP						
	MCP						
5th	DIP						
	PIP						
	MCP						
Wrist							
Total number of abnormal joints							
Diagnosis:		Absent Present Can't tell			Absent Present Can't tell		
Circle code:		OA 0 1 9			OA 0 1 9		
		RA 0 1 9			RA 0 1 9		
If other diagnosis, write in:							
NORMAL HAND		☐			☐		

Adapted from Verbrugge, Arthritis and Daily Life Project

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